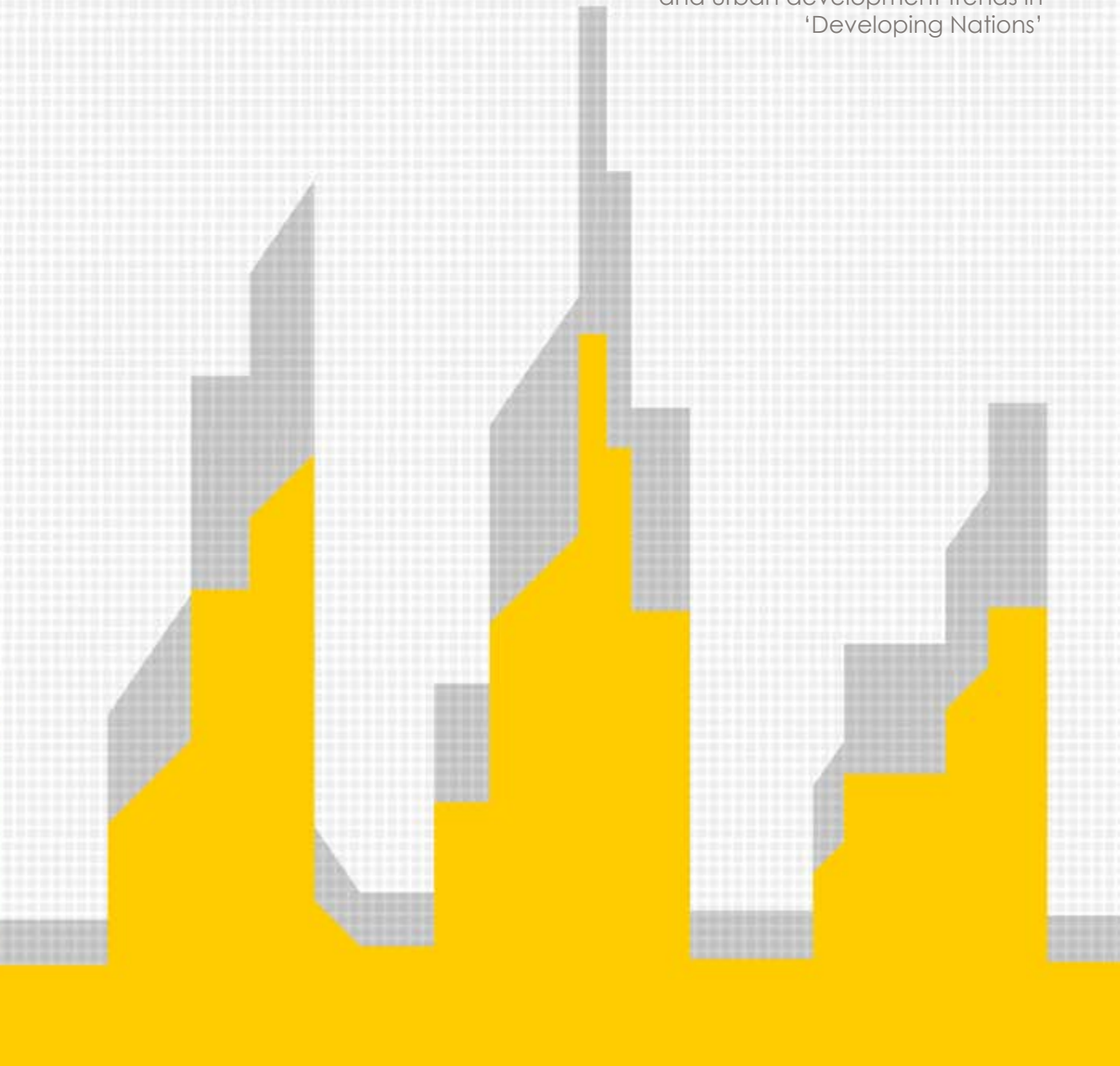


# Comprehending Urbanization

A study of current urban migration  
and urban development trends in  
'Developing Nations'



# Comprehending Urbanization

A study of current urban migration  
and urban development trends in  
'Developing Nations'

Priyank Dipakbhai Parmar

Metricola No. : 764877

Relatore : Prof. Paolo Belloni

Politecnico di Milano - Scuola di Architettura e Società  
Academic Year 2012-2013



*“We are in  
danger...”*

*..of making our cities places where business goes on but where life, in its real sense, is lost.”*

- Hubert H. Humphrey



## Content

1. Definitions.....	9. Modernist Approach.....
2. Contemporary Phenomenon of Urban Migration.....	Le Corbusier (Case Studies)
3. Concentration & Scale of Urbanization.....	Chandi Grah
4. Cities, Urbanization & Urban Economy.....	Master plan for Paris
Urbanisation	Algiers
Cities of Brazil, India & China	Case of Robin hood Gardens
Speed (Urban Migration)	10. Metabolism.....
Power of Cities	11. The Phenomenon - Rapid Urbanization in Developing Nations.....
5. Cities & Urban Sprawl.....	Urbanization Pattern
Expanding Cities	Changing Urban Economics
Urban Sprawl/Density	Urban Inequality
6. Density.....	Current Housing Policies
Cities Density Analysis	12. Sociological approach.....
7. Cities & Environmental Impact.....	Saskia Sassen
City's Density & Energy Consumption	Jan Ghel
City's Density & Environmental Impact	13. Contemporary Theory.....
8. HyperDensity.....	Rem koolhaas – Generic City
Konwool Walled City, Hong Kong	Creative city
Dharavi Slum, Mumbai	Green City (Eco City)
Learning from HyperDensity	14. Articulation of Idea.....
	Generic System of Structural Colaboration
	Periodic Densification
	Conceptual Design



## Abstract

Late 20th century wave of economic liberalisation lead number of significant countries to open up their economies to the world market. Along with economic stability, open economy accelerated the proliferation of basic services like education and health care to the vast rural population. These countries now are getting ready to march in to the future, lifting millions of people out of poverty every year.

This sudden empowerment of vast number of people has created a phenomenon of urban migration on the scale never seen before. With the exception of Mexico and Brazil, most of these movements are being registered in Africa & Asia, in the countries most commonly described as 'Developing Countries'.

People in huge numbers are migrating to urban areas seeking for economic opportunities and to be part of country's economic success. This unprecedented internal migration is causing great cities to crumble under its own weight. Cities like Shanghai, Mumbai & Sao Paolo has seen its population double in mere two decades. The preliminary research focuses on understanding this phenomenon of mass urban migration and quantifying its impact on the cities.

Study also focuses on gazing a critical view over the present approach for infrastructure development in 'Developing Countries'. With retrospection in to the great architecture movements like Modernism & Metabolism, along with theories of urban sociologist like Saskia Sassen, the study will try to give a viable schematic proposal for generic urban block for these megacities.

## Abstract

Alla Fine de 20° secolo, una ondata di liberalizzazione economica, ha portato un certo numero significativi di paesi a aprire le loro economie al mercato mondiale. Insieme con la stabilità economica, la economia aperta ha accelerato la proliferazione di servizi di base come l'istruzione e l'assistenza sanitaria per la grande popolazione rurale. Questi paesi, ora si preparano a marciare per il futuro, sottraendo milioni di persone dalla povertà ogni anno.

Questa repentina emancipazione di un vasto numero di persone, ha creato un fenomeno di migrazione urbana su una scala mai vista. Con l'eccezione di Messico e Brasile, la maggior parte di questi movimenti si registrano in Africa e Asia, nei paesi più comunemente descrittive come 'Paesi in via di sviluppo'.

Le persone, in gran numero, stanno migrando verso le aree urbane, alla ricerca di opportunità economiche e di essere parte del successo economico del paese. Questa migrazione interna senza precedenti sta faccendo, ogni grandi città, crollare sotto il proprio peso. Le città come Shanghai, Mumbai e San Paolo hanno visto la sua popolazione duplicare in soli due decenni. La ricerca preliminare si concentra sulla comprensione di questo fenomeno di migrazione urbana di massa e quantificare il suo impatto sulle città.

Questo studio si concentra anche su una visione critica sul approccio attuale per lo sviluppo delle infrastrutture in Paesi in via di sviluppo ". Con retrospezione per i grandi movimenti di architettura come Modernismo & Metabolismo, insieme con le teorie di sociologi urbani come Saskia Sassen, lo studio cercherà di dare una proposta valida e schematica di un isolato urbano generico per queste megalopoli.

## Definitions

### Urban Area

Agglomerations of 2 500 or more inhabitants, generally having population densities of 1 000 persons per square mile or more. Two types of urban areas: urbanized areas of 50,000 or more inhabitants and urban clusters of at least 2 500 and less than 50,000 inhabitants.<sup>[1]</sup>

### Urbanization/ Urban Migration

Urbanization is the movement of population from rural to urban areas and the resulting increasing proportion of a population that resides in urban rather than rural places.<sup>[2]</sup>

### Sub Urban Area

Suburb: Collectively, the suburbs are all of the continuous urbanization that extends beyond the core city (all of the urban area except the historical core municipality and other adjacent historical municipalities). A specific suburb can be an individual municipality or community in the suburbs.<sup>[3]</sup>

### Migration

The movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification.<sup>[3]</sup>

### Urban Sprawl

Urban sprawl is a multifaceted concept centered around the expansion of auto-oriented, low-density development. Topics range from the outward spreading of a city and its suburbs, to low-density and auto-dependent development on rural land, examination of impact of high segregation between residential and commercial uses.<sup>[4]</sup>

### megacity

A metropolitan area with a total population in excess of 10 million people.

### Urban growth

The increase in the number of people who live in towns and cities, measured either in relative or absolute terms.<sup>[5]</sup>

### Natural increase

The difference between the number of births and number of deaths in a given population.

### The urban transition

The passage from a predominantly rural to a predominantly urban society.<sup>[5]</sup>

[1] UN - Definition by United States  
- [http://unstats.un.org/unsd/demographic/sconcerns/densurb/Definition\\_of%20Urban.pdf](http://unstats.un.org/unsd/demographic/sconcerns/densurb/Definition_of%20Urban.pdf)

[2] UN Definition

[3] - International Organization of Migration. - <http://demographia.com/db-define.pdf>

[4] SprawlCity.or/Definition\_urban\_Sprawl

[5] [http://www.unfpa.org/swp/2007/english/chapter\\_1/index.html](http://www.unfpa.org/swp/2007/english/chapter_1/index.html)



# Contemporary Phenomenon of Urban Migration

## Migration

Migration is a deep rooted phenomenon in every living being. Since the conception of life, living creatures have been migrating in search of favourable conditions and human beings are no exception.

Pre-historical migration of human populations began with the movement of *Homo erectus* out of Africa across Eurasia about a million years ago. *Homo sapiens* appears to have colonized all of Africa about 150 millennia ago, moved out of Africa some 80 millennia ago, and spread across Eurasia and to Australia before 40 millennia ago. Migration to the Americas took place about 20 to 15 millennia ago, and by 1 millennium ago, all the Pacific Islands were colonized. Later population movements notably include the Neolithic revolution and Indo-European expansion, part of which emerges in the earliest historic records.<sup>[1]</sup>

[1] "Atlas of the Human Journey-The Geographic Project". National Geographic Society. 1996-2008. Retrieved 2009-10-06.

## Major Reasons For Migration

**The pushing and pulling forces of migration.** People migrate either because they are being pushed out of their place of origin, or because they are pulled to their new migration destination. Or more often, people move because of a combination of overlapping pushing and pulling forces. Some are pushed out of their native places because they can't earn sufficient income to sustain themselves or their households. Others may be pushed out of their place, either temporarily or permanently, by natural disasters such as floods, droughts or earthquakes or because of sustained ecological changes, such as desertification or soil erosion. At the same time, people are pulled to their migration destination by better job prospects, better education and health facilities, or more freedom from restrictive social and cultural realities, for themselves and for their children.

**Most have little chance of making a decent living in agriculture.** Most people in the rural areas work in the agricultural sector, but agriculture is highly dependent on weather conditions, rural land is limited and its fertility is sometimes low or declining, land holdings are small, farm debts are high, and many households have always been or have become landless. As a result, overall rural incomes tend to be pretty low. In order to increase income, small farmers need to increase their productivity, but they are often too poor to pay for the necessary technology, whether it is equipment, high-yield seeds or expensive chemical fertilizers. Increasingly, farmers and others in rural areas supplement their income from agriculture with non-farm income, in the rural areas if possible, or in urban areas through temporary migration to work on construction sites, in domestic work, as self-employed street vendors or in other kinds of urban jobs.

**Migration to cities improves the prospect of finding better jobs.** Even when a rural household can live off its land, the future for rural children is in non-farm and more

often in non-rural employment. For these children, migration to urban areas improves their prospects of finding such employment. Besides dramatically increased job opportunities, urban areas offer them better education and health care opportunities — and sometimes greater social freedom. Because urban cultures tend to be less constrained than village cultures by traditional customs and hierarchical structures, cities also offer young migrants and their children greater prospects of upward social mobility.

**People know what cities have to offer them.** Although some rural households have no choice but to leave the rural areas in order to survive, most migrants make a deliberate choice to stay or to leave. Improvements in transport, the availability of mobile phones, improved communications and increasing links with earlier generations of urban migrants in the city have all made the rural population much more aware of both the advantages and the drawbacks urban areas offer, in particular what kind of employment opportunities are available and what kind of housing conditions exist.

**Urban migration is often a survival strategy for rural households.** In order to spread economic risks, households may split into several groups that locate themselves in different places: rural areas, small towns, and big cities, while some household members may even move abroad. In this way, the household's sources of income are diversified and are not vulnerable to economic downturns in a particular place. This arrangement also allows children and the elderly to remain in the villages where living costs are low, while income-earners and school-aged children move to the most suitable places.



## Simulation of World Migration



1500 AD



1850 AD



1980 AD



1600 AD



1900 AD



1995 AD



1700 AD



1950 AD



2010 AD



1800 AD



1965 AD



2025 AD





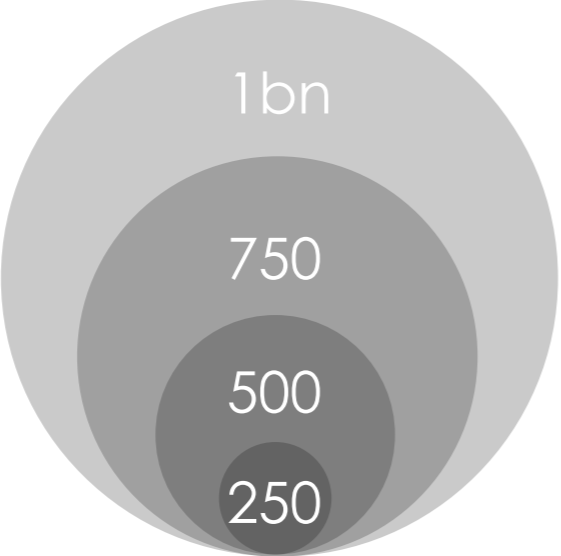
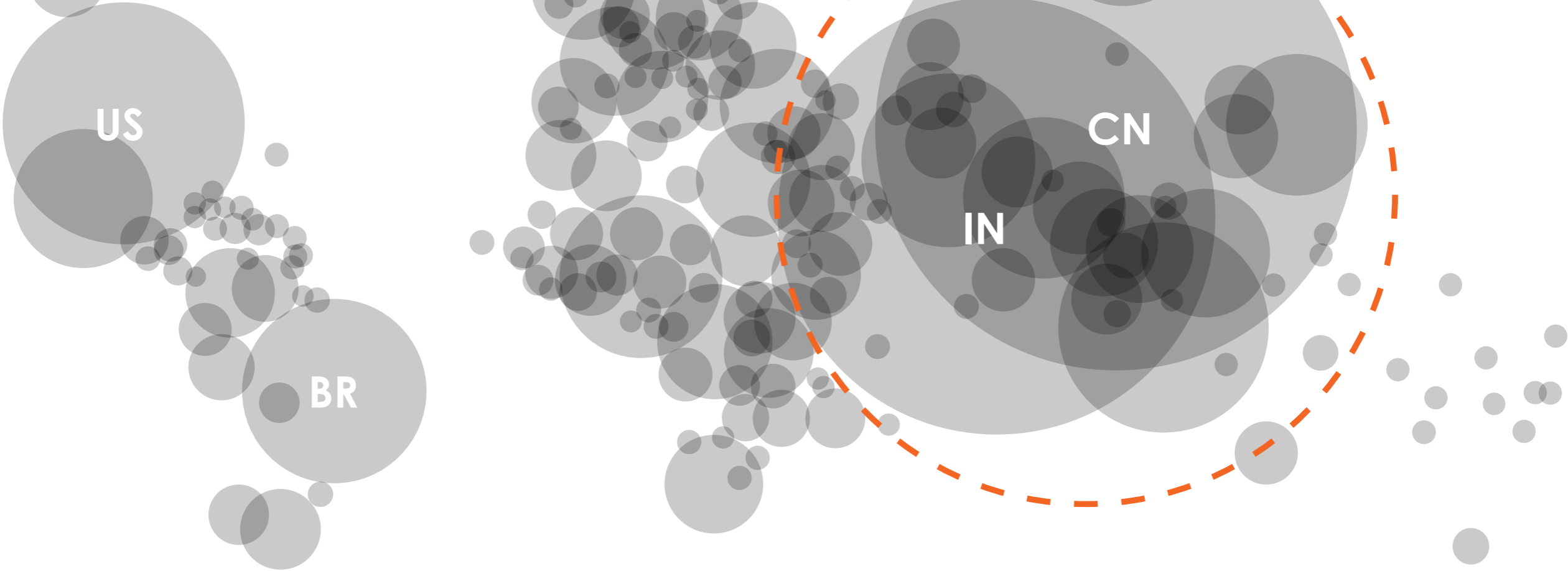
*7 Billion  
People*

*One*

*Planet*



# World Population Distribution by 2013



Population Data in Millions

(Figure 2.1)

Total World Population 7,126,663,332<sup>[1]</sup> (By 02-07-2013, 07:40:00)  
More than half of world population lives in the region inside the marked circle.

[1] <http://www.worldometers.info/world-population/>

# Human Footprint on Planet



Low Impact  
High Impact

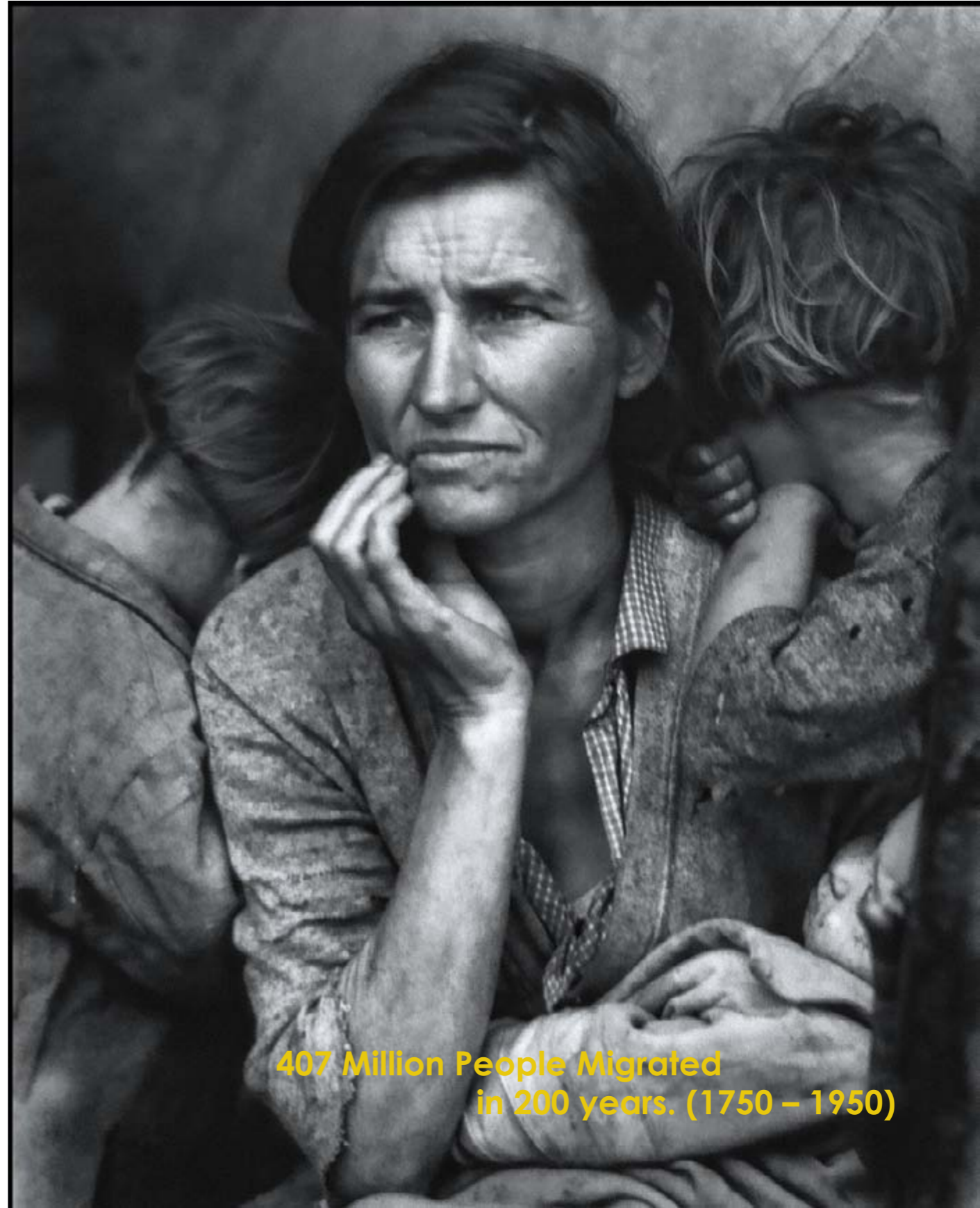
## The First Wave Of Urban Migration

The modern city arose, above all else, from major innovations in combustion technology. Industrial cities began to develop in Britain in the 18th century, and in the 200 years between 1750 and 1950, Europe and North America experienced the first demographic transition, the first industrialization, and the first wave of urbanization. This produced the new urban industrial societies that now dominate the world. The process was comparatively gradual and involved a few hundred million people.<sup>[1]</sup>

The migration was driven by the urge to be the part of industrial society. During the 18th century, the cities started looking somewhat like modern cities with growing educational and health infrastructure. Cities, for the first time became the trading hub and place for opportunity. Even on the first wave of migration, the rate of migration was very high. Since, in 1750s the population of the world was less than a billion, the total number of migrants were far less than contemporary numbers.

In 1804, the world's population reached 1bn, and by the end of this 200-year period, in 1950, the world had two "megacities" (ie populations of more than 10M): New York-Newark with 12.3 million and Tokyo housing 11.3 million. Later London joined the club of mega cities and since then the number of cities are increasing.

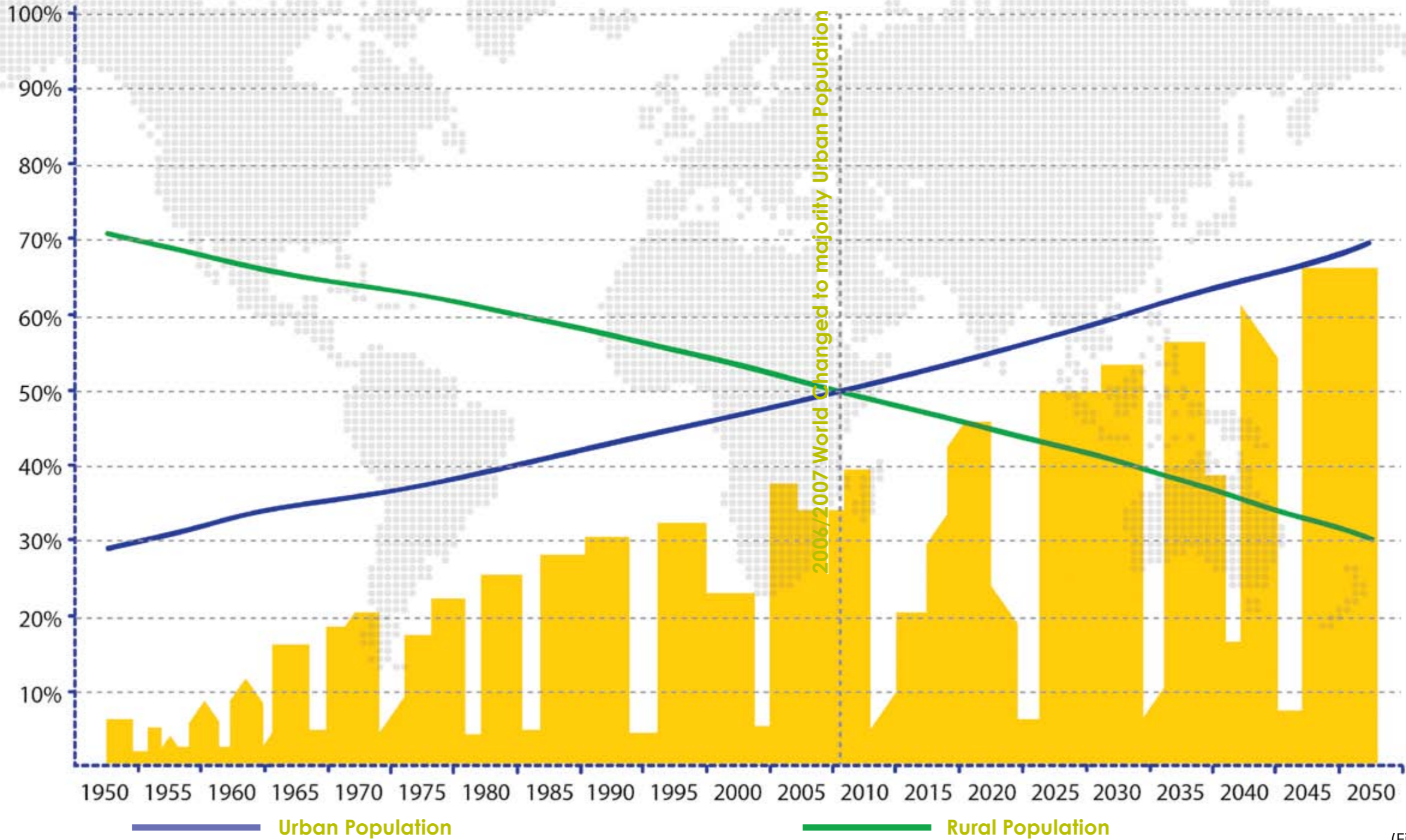
[1]Urbanization as a driver of change,  
Susan Thomas  
<http://www.sustainabilityforhealth.org/system/documents/334/original/F1581776-19BB-316E-40DE3EAA1E-D8B831.pdf?1263555597>



**407 Million People Migrated  
in 200 years. (1750 – 1950)**



# World Population Demographic History & Projection



(Figure 2.2)



## The Second Wave

The first urbanization wave took place in North America and Europe over two centuries, from 1750 to 1950: an increase from 10 to 52 per cent urban and from 15 to 423 million urbanites. In the second wave of urbanization, in the less developed regions, the number of urbanites will go from 309 million in 1950 to 3.9 billion in 2030. In those 80 years, these countries will change from 18 per cent to some 56 per cent urban.<sup>[1]</sup>

*Urban Migration of 407 Million people, which spanned 200 years, is occurring in Developing Nations every 9 years.*

Developing nations, at present, are experiencing urbanisation of the pace which is never seen before in the history of mankind. Urban Migration of 407 Million people, which spanned 200 years in western countries, is occurring in Developing Nations every 9 years.

### Urbanization in Developing nations from 1950-2030



Urban: 18 Rural: 82

Population Distribution in 1950



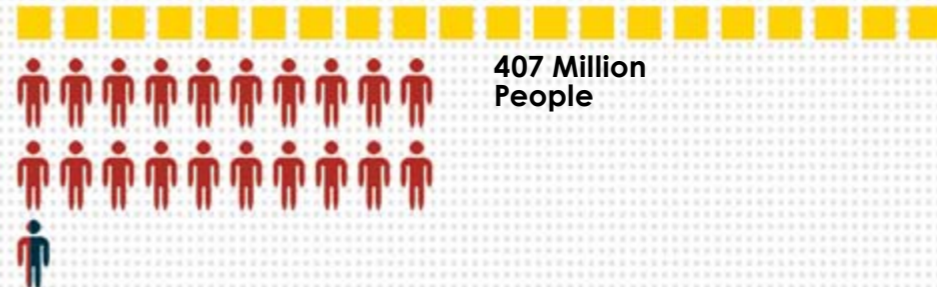
Urban: 56 Rural: 34

Population Distribution Projection in 2030

(Figure 2.3)

### First Wave Of Urban Migration 1750-1950

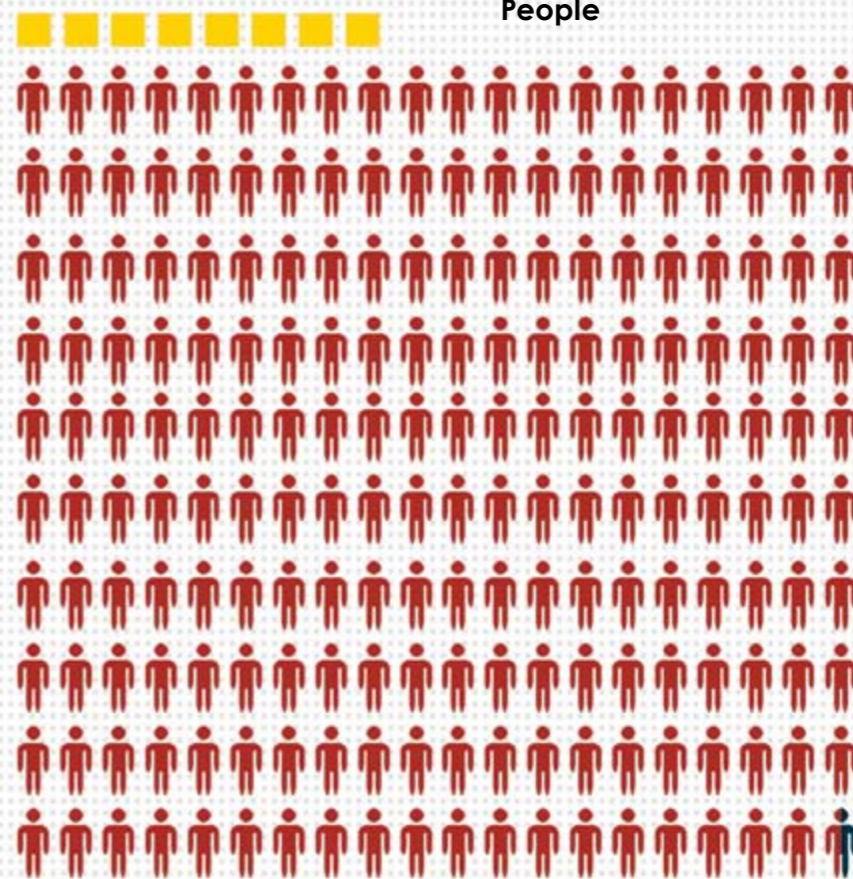
200 Years



407 Million People

### Second Wave Of Urban Migration 1950-2030

80 Years



3.6 Billion People

10 Years



20 Million People

(Figure 2.4)

**22**

**X**

***Faster  
Than  
First  
Wave Of  
Migration***

## The Second Wave

During first wave of migration western and American countries experienced the first demographic transition and the first industrialization. This produced the new urban industrial societies that now dominate the world. The process was comparatively gradual and involved a few hundred million people.

*Compared to First Wave of migration, contemporary migration will involve 9 times more people and will take place 2.5 times smaller time frame.*

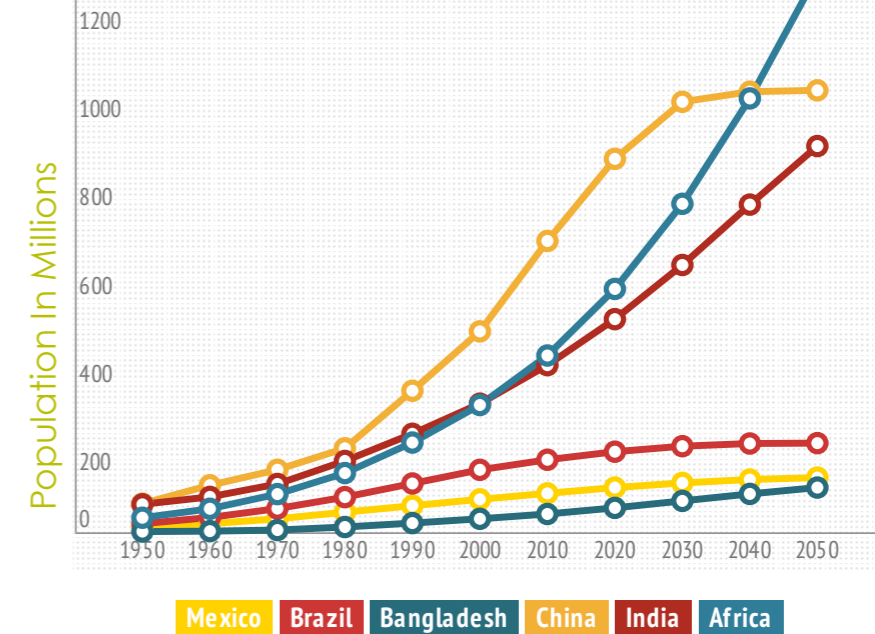
In the past half-century, the less developed regions have begun the same transition. Mortality has fallen rapidly and dramatically in most regions, achieving in one or two decades what developed countries accomplished in one or two centuries, and the demographic impacts of these mortality changes have been drastically greater. Fertility declines are following—quite rapidly in East and South-East Asia and Latin America and more slowly in Africa.<sup>[1]</sup>

In both waves, population growth has combined with economic changes to fuel the urban transition. Again, however, the speed and scale of urbanization today are far greater than in the past. This implies a variety of new problems for cities in poorer countries. They will need to build new urban infrastructure—houses, power, water, sanitation, roads, commercial and productive facilities—more rapidly than cities anywhere during the first wave of urbanization.

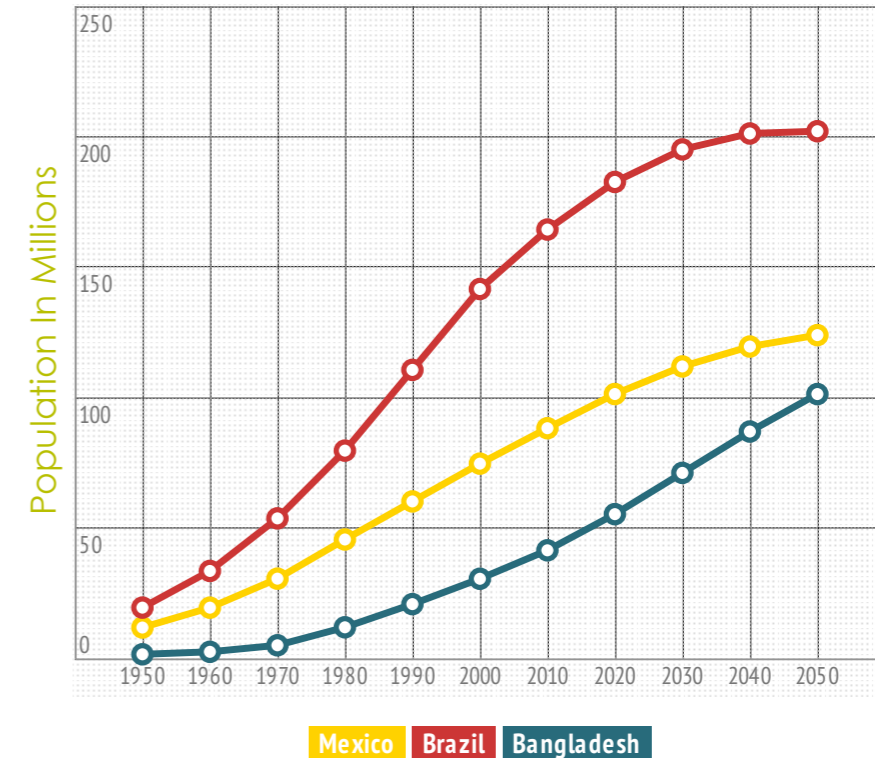
Two further conditions accentuate the second wave. In the past, overseas migrations relieved pressure on European cities. Many of those migrants, especially to the America, settled in new agricultural lands that fed the new cities. Restrictions on international migration today make it a minor factor in world urbanization.

[1] [http://web.unfpa.org/swp/2007/english/chapter\\_1/urbanization.html](http://web.unfpa.org/swp/2007/english/chapter_1/urbanization.html)

### Urbanization data for developing countries/region



(Figure 2.5)



(Figure 2.6)



Finally, the speed and size of the second wave are enhanced by improvements in medical and public health technology, which quickly reduce mortality and enable people to manage their own fertility. Developing and adapting forms of political, social and economic organization to meet the needs of the new urban world is a much greater challenge.

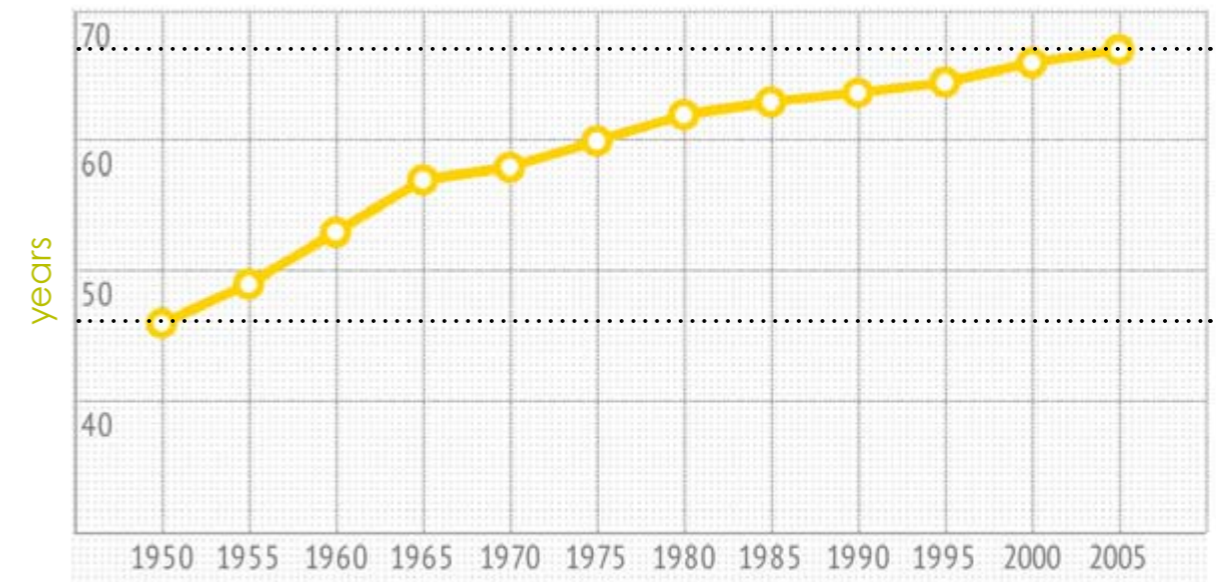


Asian/African person

(Figure 2.7)

**By 2030, Africa and Asia will include almost seven out of every ten urban inhabitants in the world.**

Since the first wave, Global life expectancy has risen by 33%

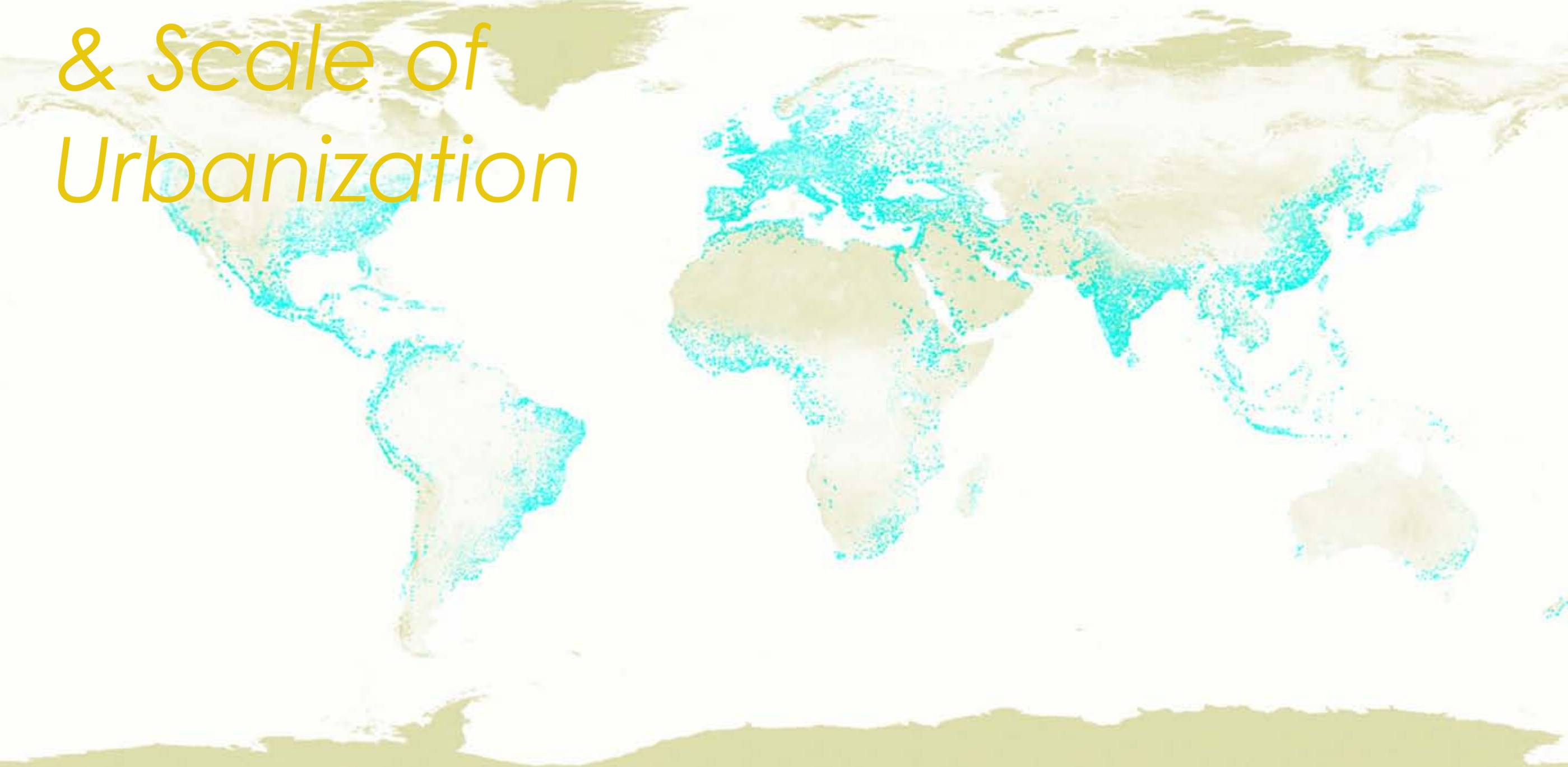


Life Expectancy

(Figure 2.8)

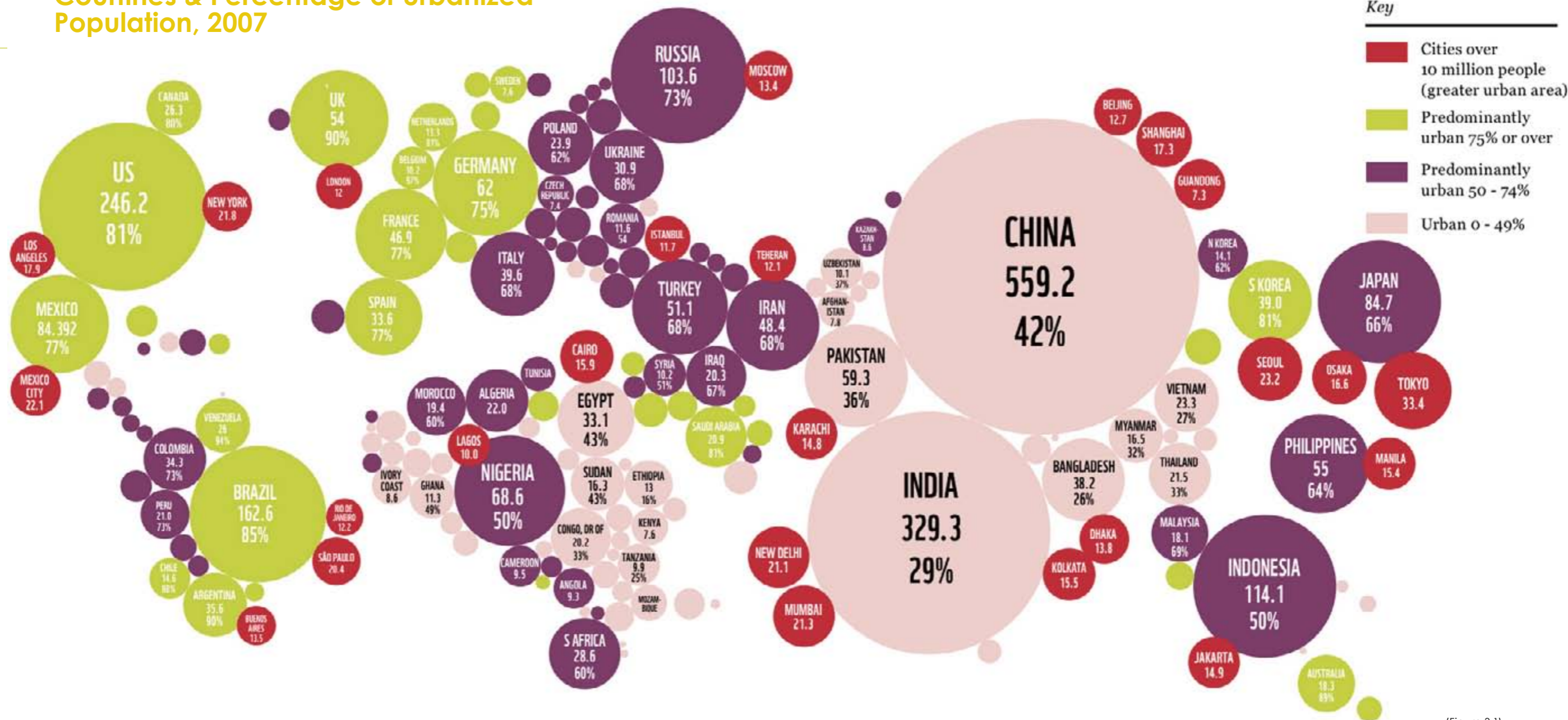
*Advances in Medical technologies and its penetration to the rural parts of the world have produced dramatic effects in the human life expectancies. To the most part of the world, child deaths and maternity deaths have reduced or is on the way of reduction. Only in last five decades, we have seen global life expectancy increase by 33%. This figures has significant impact on rise in urban population.*

# *Concentration & Scale of Urbanization*





## Countries & Percentage of Urbanized Population, 2007

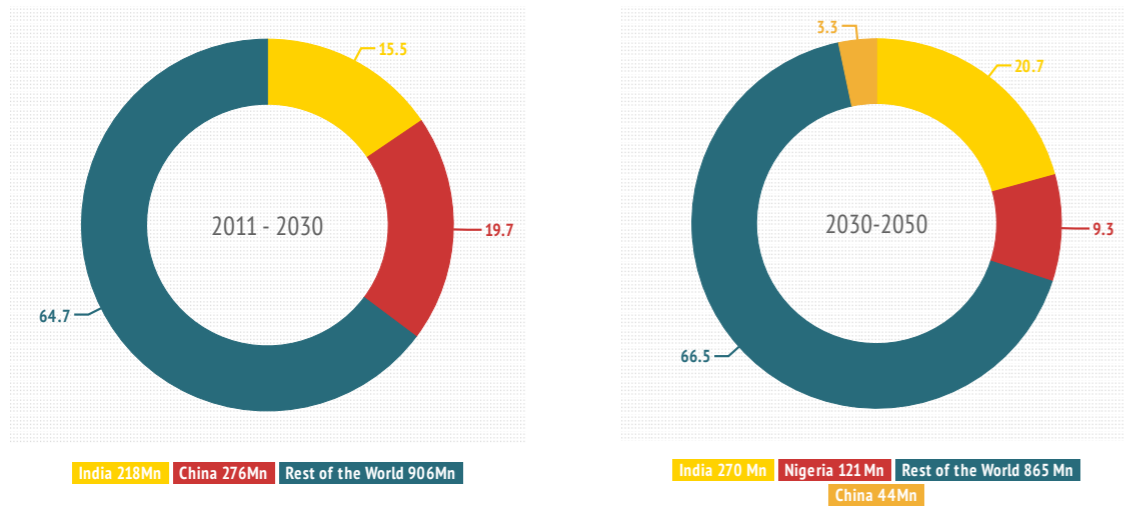


Both the Asian giants represent one of the least percentages of urbanization amongst developing countries.

However, the process of urbanization is well underway with China leading the first quarter of century with big margins.

(Figure 3.1)

## Regions Stimulating 21st century Urbanization



(Figure 3.2)

World urbanization data shows steady percentage increase in urban population and corresponding steady percentage decreases in rural population of the world since 1950s. However this data only tells half of the storey. During the first wave of urbanization, the rate of urbanization was the same as now (Figure 1.2). However, the first wave migration phenomenon was concentrated majorely towards the western countries. Moreover, population then was much lower than present world population. First wave of migration, just like second wave, was not the world wide phenomenon. It was mainly concentrated and confined to then developing economies of western world.

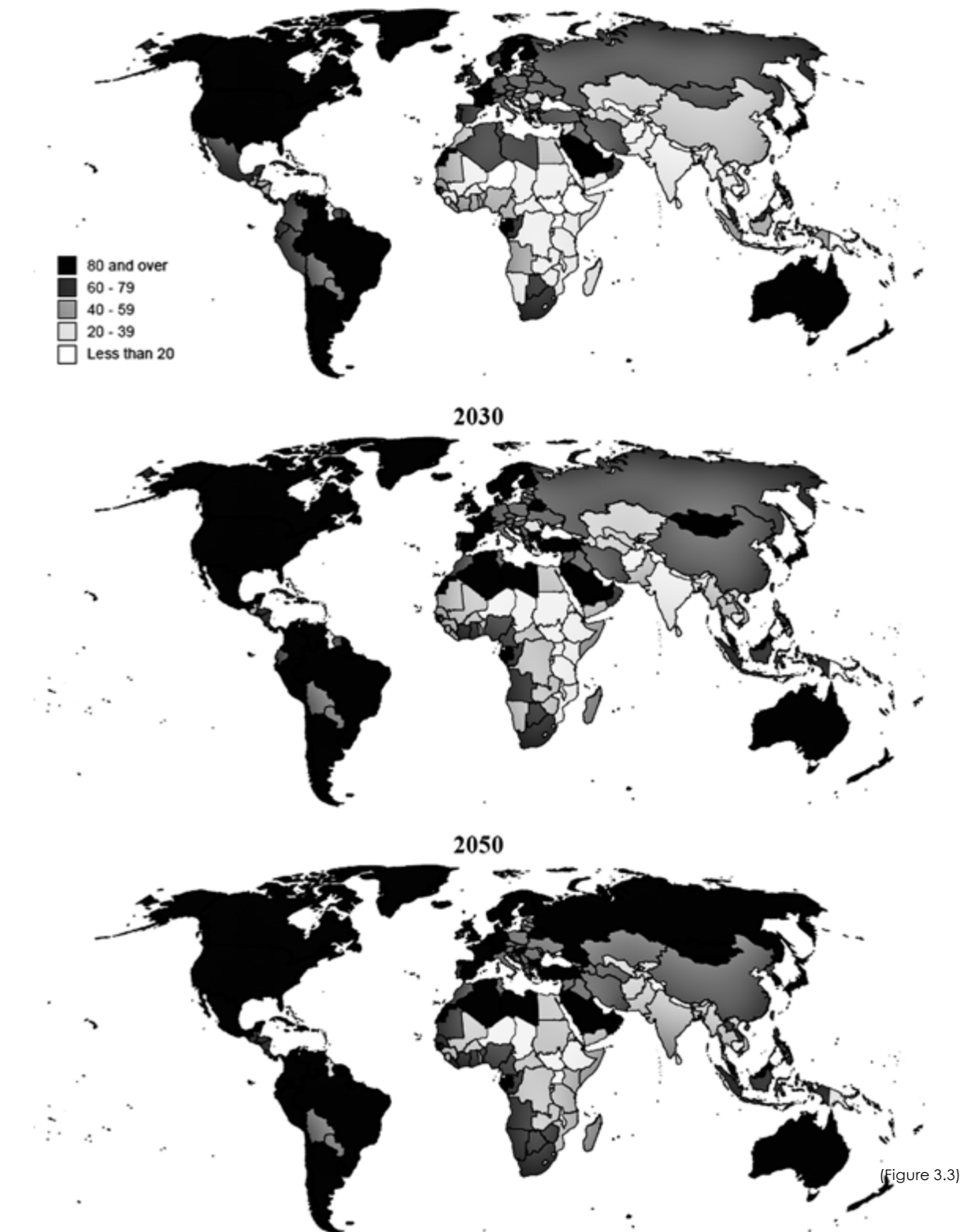
As a result of this concentrated migration, western world today, has almost 80% of urban population. 2011 research by UN shows that Eastern and African countries has only 30 percent urbanized population.

United Nations Department of Economic and Social Affairs/Population Division 5

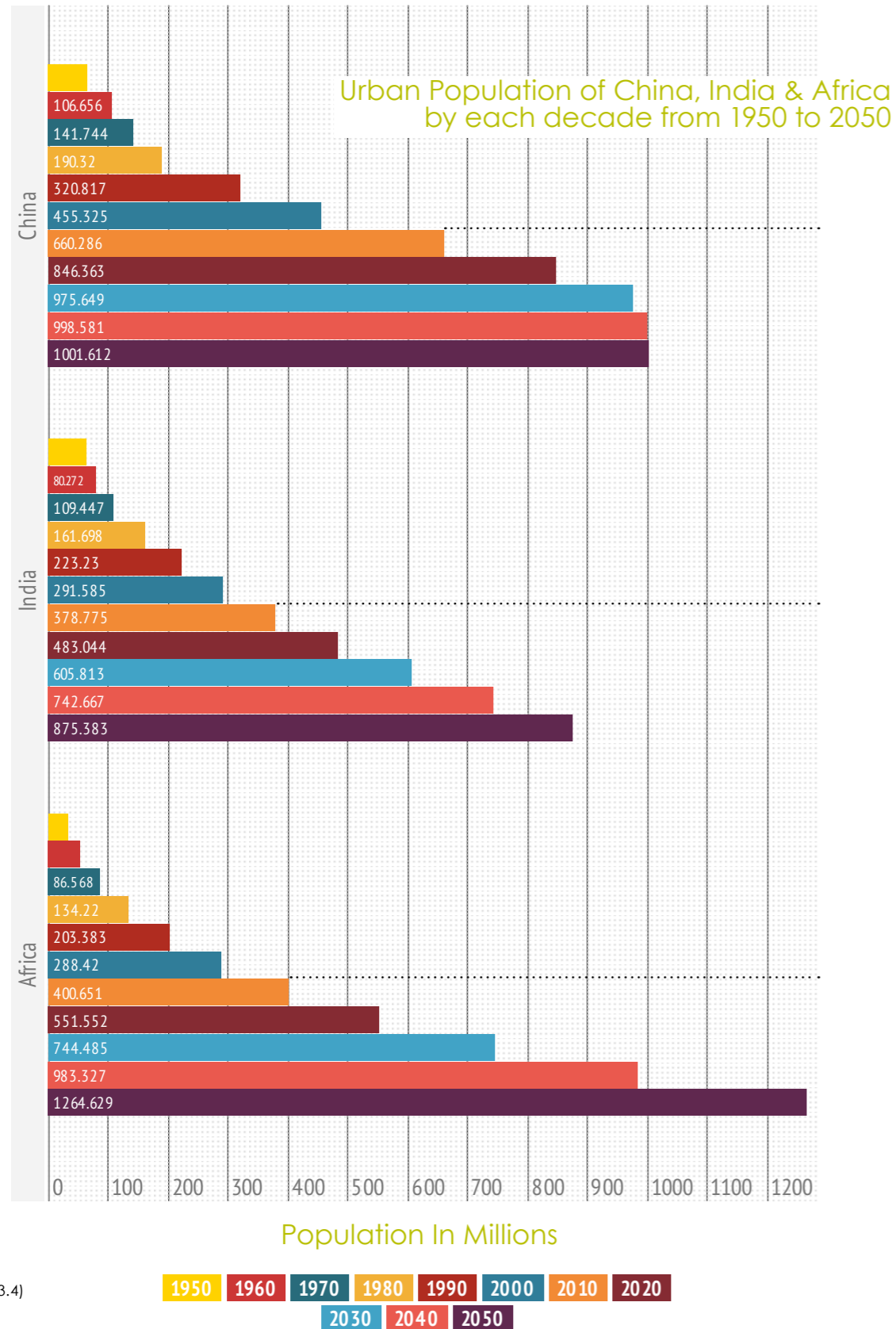
World Urbanization Prospects: The 2011 Revision

Image 2.3 - United Nations, Department of Economic and Social Affairs, Population Division: World Population Prospects DEMOBASE extract, 2012.

## World Urbanization Prospects 2011



(Figure 3.3)



(Figure 3.4)

Hence, the second wave of migration is being driven by developing countries with large rural population from Asia and Africa. The statistics from 'United Nations Department of Economic and Social Affairs' also shows that the significant percentage of world urban migration will be contributed by two countries, India & China. From 2011-2030, these two countries will share almost 37% of entire world's urban migration and rest 63% will be shared by rest of the countries (figure 3.2).

China, in last three decade, has already lifted its urban population till the mark of 682 million people. On the contrary, India by 2011 has world's largest rural population of 853 million people followed by china's 666 million. By 2030, China is set to lift 276 million more people in to main stream urban area (figure 3.2), Stretching its urban population close to 1 Billion mark.

During the period of 2030-2050 China is only expected to contribute 3.3% (44 million people) in urban migration. However India, with its largest rural population, will take on the centre stage by taking 20% (270 million) of world urban migration share. During 2030-2050 several African nations are expected to be sufficiently developed and millions of people will move to urban regions. 121 million people from Nigeria is expected to urbanize during this period (figure 3.2).

Data Source - United Nations Department of Economic and Social Affairs/Population Division 5  
World Urbanization Prospects: The 2011 Revision



## Distribution of Urban Population

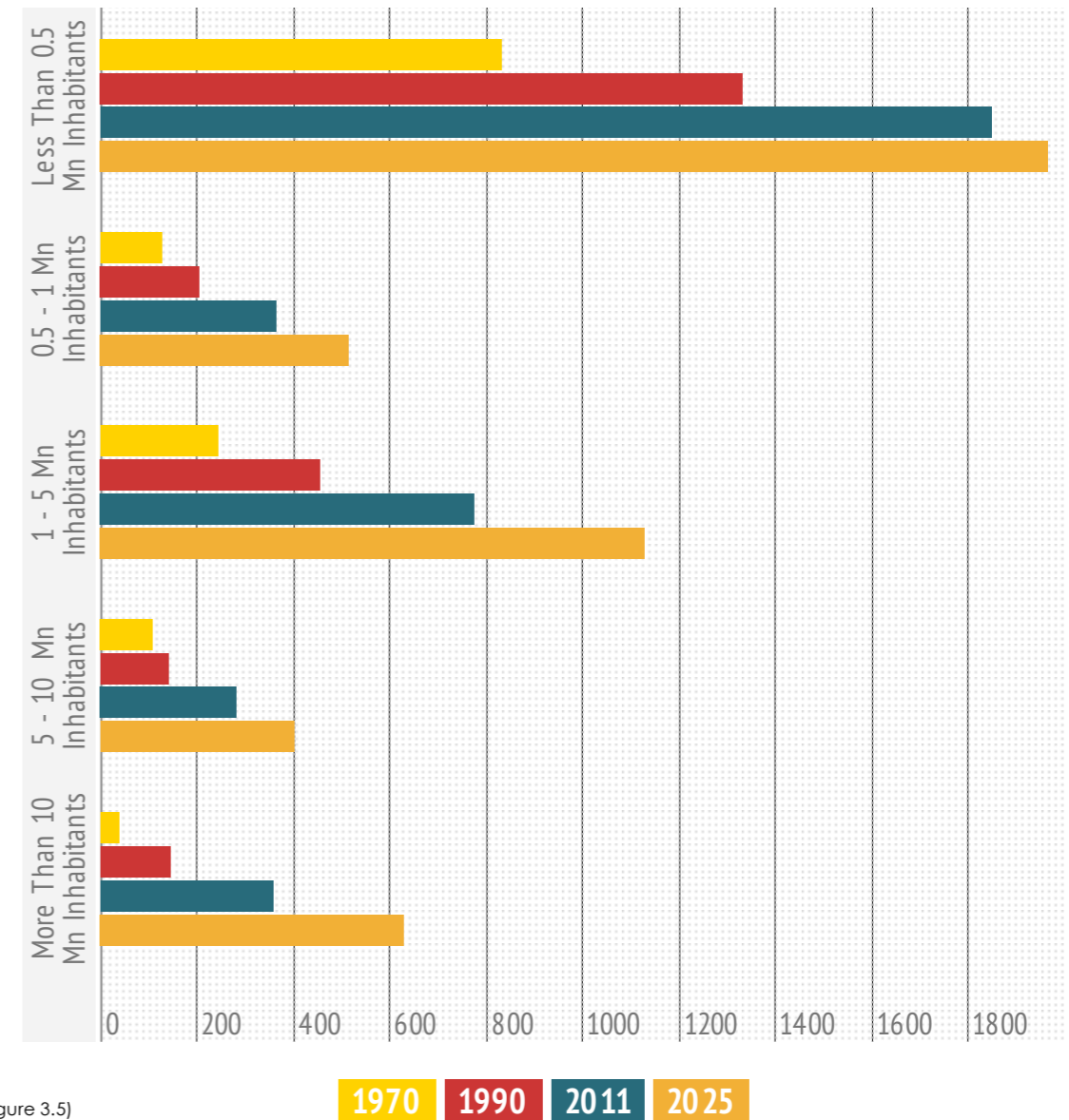
The sustained increase of the urban population combined with the pronounced deceleration of rural population growth will result in continued urbanization, that is, in increasing proportions of the population living in urban areas. Globally, the level of urbanization is expected to rise from 52 per cent in 2011 to 67 per cent in 2050. The more developed regions are expected to see their level of urbanization increase from 78 per cent to 86 per cent over the same period. In the less developed regions, the proportion urban will likely increase from 47 per cent in 2011 to 64 per cent in 2050.

However, the world urban population is not distributed evenly among cities of different sizes. Over half of the world's 3.6 billion urban dwellers (50.9 per cent) lived in cities or towns with fewer than half a million inhabitants. Such small cities account for 55 per cent of the urban population in the more developed regions and for 50.2 per cent of that in the less developed regions.

*Although the megacities attract considerable attention because of their population size and geographical complexity, they represent the extreme of the distribution of cities by population size. They are followed by large cities with populations ranging from 5 million to just under 10 million, which in 2011 numbered 40 and are expected to number 59 in 2025. Over three quarters of these "megacities in waiting" are located in developing countries and account for about 9 per cent of the urban population.*

*Growth of Small Cities - Cities with fewer than 1 million inhabitants already account for more than 60 per cent of urban dwellers globally (UNFPA, 2007).*

### Urban population distribution by size of settlement



(Figure 3.5)



***A Million  
Per Week  
Are Coming***

***Are we  
Ready?***

***Till 2050***



## Case Of China

**By 2025**

China will have 130 cities with over one million inhabitants

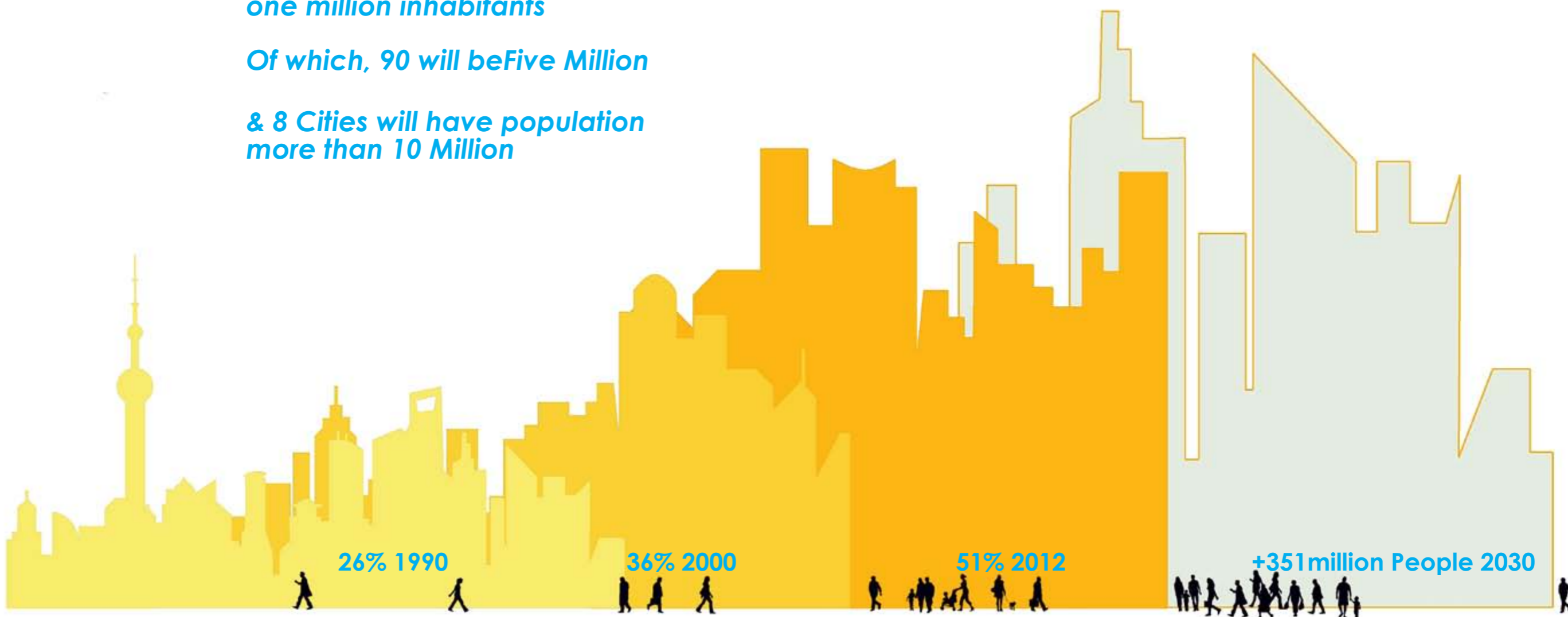
Of which, 90 will be Five Million

& 8 Cities will have population more than 10 Million

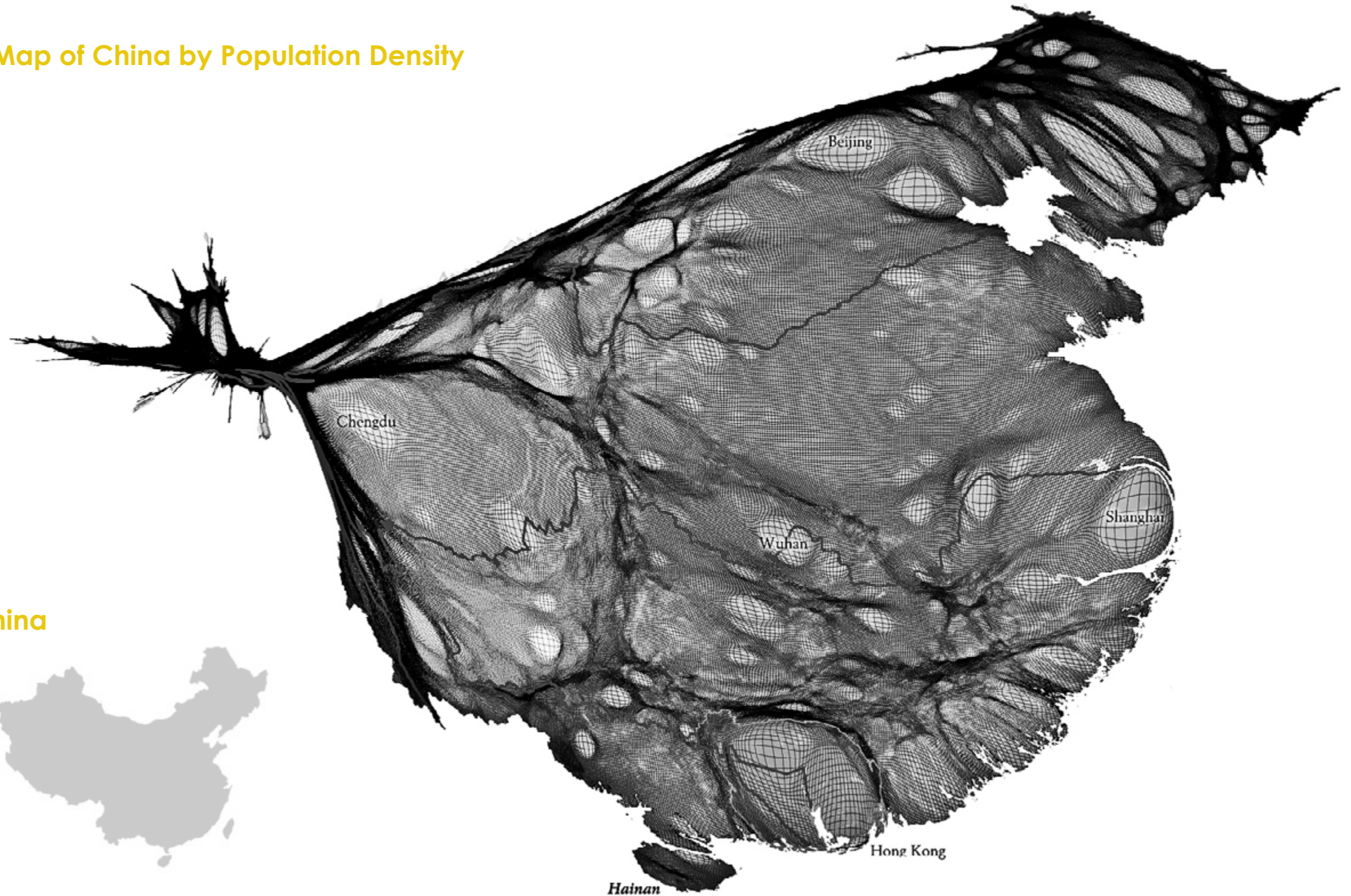
China has Four Megacities Now

**By 2025**

There will be Three More



## Distorted Map of China by Population Density



## Map of China



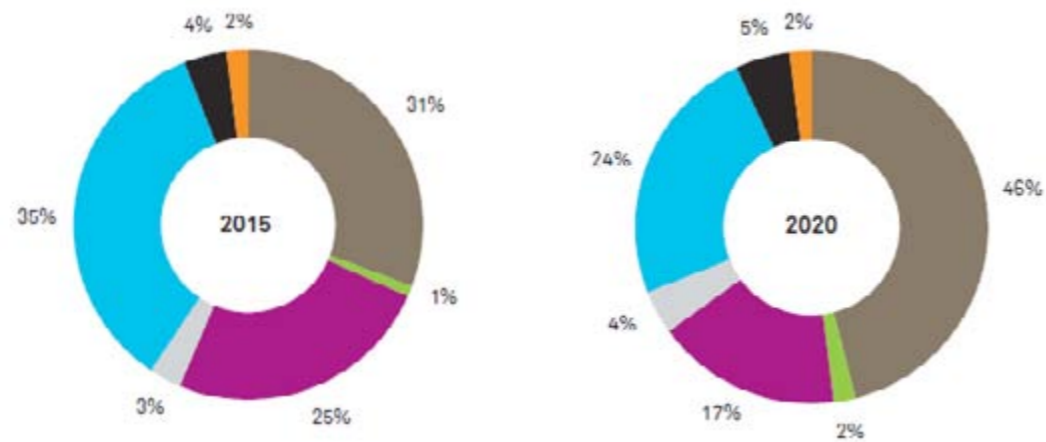


**THE CONDITION OF CHINESE ARCHITECTURE** is symbolic; it is iconic; it is based on the permeability and on the fluid spaces in which the internal and external space joining together creating the equilibrium between the inside and outside, between man and nature, between architecture and nature, between artificial and nature. **THE CONDITION OF CHINESE ARCHITECTURE** is indefinite; it is changeable; it is sponta-

neous, the context seems to exist; it is varied and active as his society. **THE CONDITION OF CHINESE ARCHITECTURE** aims to immensity but made by small situations. **THE CONDITION OF CHINESE ARCHITECTURE** is the result of a whole; its relevance, its history, its cultural roots. if we want to understand what it means we have to immerse ourselves in it, only from the inside we can understand its logic and relate to it.

## Shifting Gravity of World Construction Sector

Share of construction spending by region 2015-20



(Figure 3.6)



The building spree in east along with the economic slow down in west is shifting the gravity of global construction market. Developing countries are expected to lead growth in 2013 onwards. The strongest construction spending growth will again be in China, followed by India and Indonesia. In addition, reconstruction spending in both Japan and New Zealand will provide a temporary stimulus to construction spending in both countries. In Latin America, the only other major growth area, Brazil and Panama are also expected to exhibit robust construction spending growth throughout the forecast period.

Going forward, the outlook for global construction is likely to be dictated by development status. Generally, the share of global construction spending continues to shift from developed country markets to developing country markets. In particular, the Asian market has increased from a share

## Global Construction Funding Growth



(Figure 3.7)

of 31% in 2005 to a forecast share of 46% by 2020. This shift is largely at the expense of decline in the Western Europe market which has shrunk from a share of 35% in 2005 to a forecast share of 24% in 2020.

These are significant changes in the structure of the global construction market over a relatively short time frame of probably 15 years and when combined with relative growth levels (i.e. rapid spending growth in developing countries and stagnation in developed countries) suggest a new focus for global construction spending in the future.



# *Cities, Urbanization & Urban Economy*





## Why Cities?

Why are we facing such a strong phenomenon of urban migration?



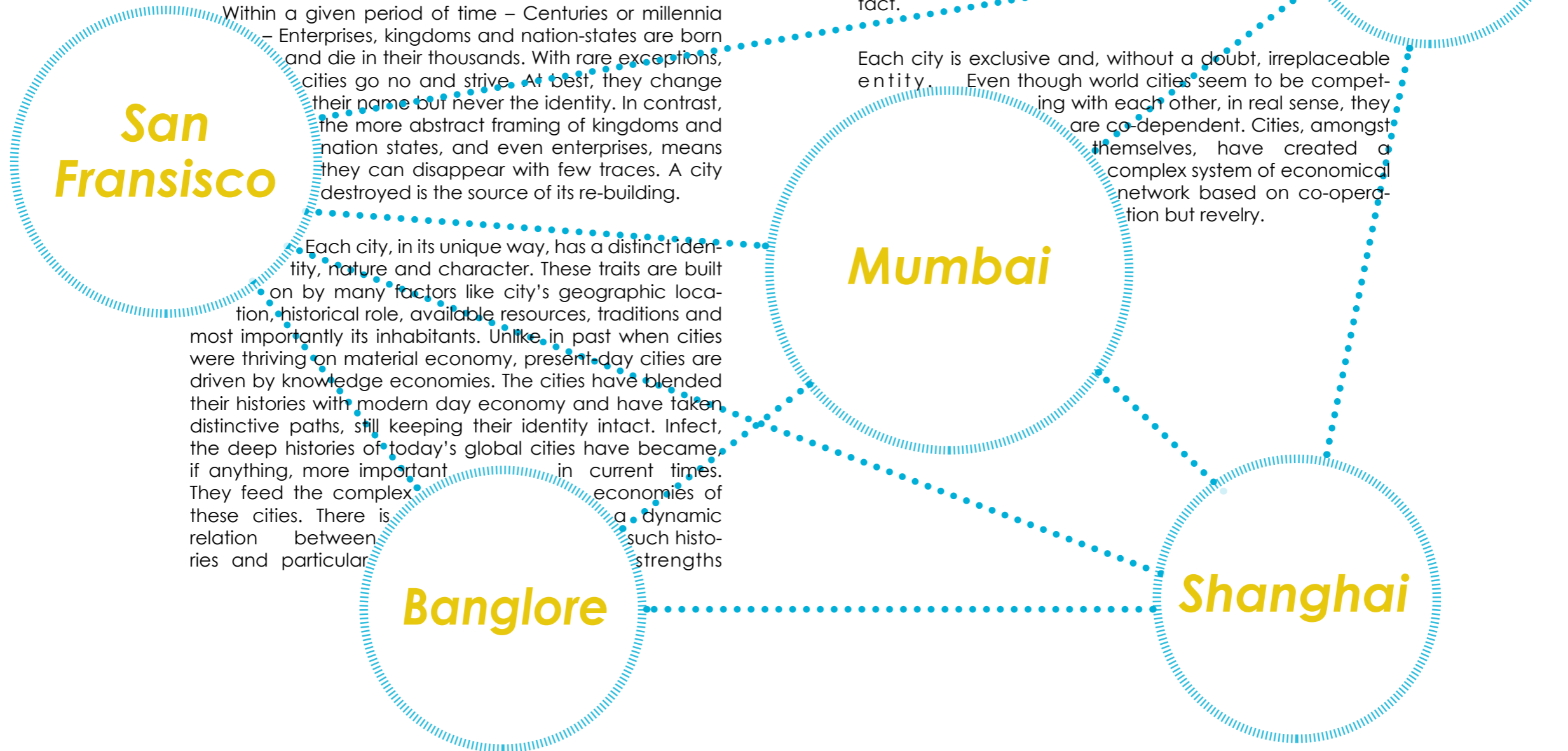
We, at present, are living in an urban majority world. Since 2007, half of the world's population is already living in urban areas, generating more than 80 percent of global GDP every year. Cities are our economic Powerhouses. Top 600 urban centres houses 50% of world population and generates 60% of global GDP.<sup>[1]</sup>

The earth's urban landscape appears to be stable, but centre of gravity is shifting decisively, and at speed. People seeking opportunities are gathering in these urban hubs. Cities, in our recent history, have become a converging point for people to share goods, skills, ideas and knowledge. Cities' global GDP performance figures are more than adequate to underline their importance. The top 380 developed region cities in the top 600 by GDP accounted for 50 percent of global GDP in 2007, with more than 20 percent of global GDP coming from 190 North American cities alone. The 220 largest cities in developing region contributed another 10 percent. Across all regions, 23 megacities with 10 million or more inhabitants generated 14 percent of global GDP in 2007. To be a part of this economical story, people in large number are drawn towards the urban areas.

Moreover, growth of the cities and inflow of migrants has ripple effect on the rural economies. Because of outflow of large number of people from rural areas, the already less opportunities are decreasing. This phenomenon also creates push effect to urban areas.

[1]McKinsey Global Institute.  
Urban World : Mapping the  
economic power of the cit-  
ies

## Cities, history & Contemporary Role





## Cities & Growth

Size of cities 1950/1990/2025



There are dramatic regional differences in the pace and scale of urbanization. The map charts the size and growth of a selection of world cities with more than 750,000 people from 1950 (Dark Green circle) to 1990 (light green circle) and indicates the projected growth to 2025 (white circle) based on UN predictions. While many European and North American cities (such as London, New York

## Size of Cities by Population

● - 1950      ● - 1990      ● - 2025



and Paris) had reached their peak by 1950, Japanese and Latin American cities (most notably Tokyo, Mexico City and Sao Paulo) grew most in the following four decades. But, over the next 20 years, the biggest and fastest growing city regions will be in Africa (Kinshasa and Lagos) and Asia, with some of the most intense levels of urbanization in India and China (especially in Dhaka, Delhi, Karachi and Mumbai).

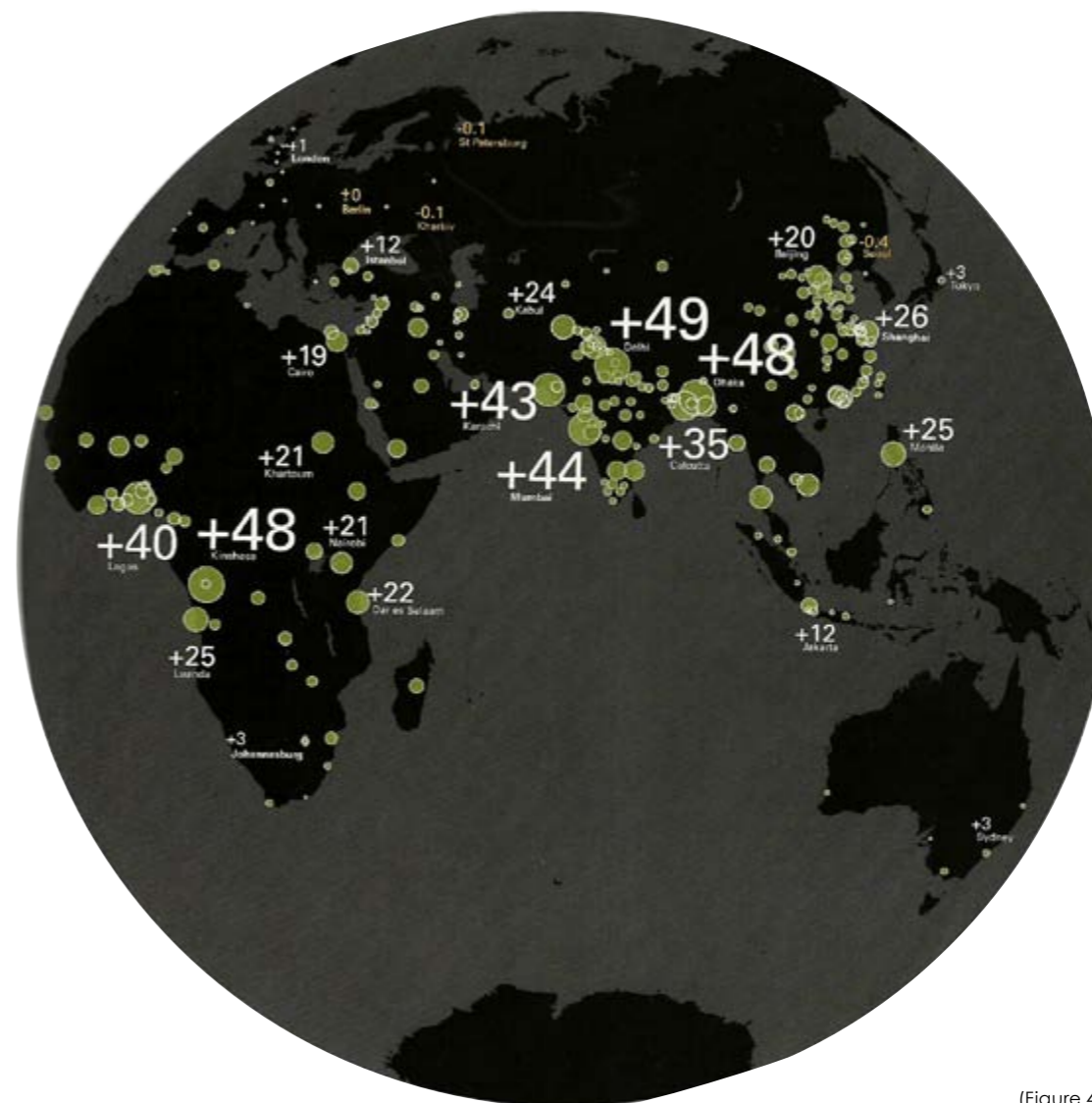
(Figure 4.1)

## Cities & Growth

### Growth Person/Hour



Kinshasa, Dhaka or Delhi will each grow at the rate of new inhabitant every 75 seconds by 2025. At the same time cities such a Berlin, St. Petersburg, Havana and Seoul are likely to see their populations shrink, reflecting differential patterns of economic and population growth. The most rapidly growing cities are located in areas where population densities

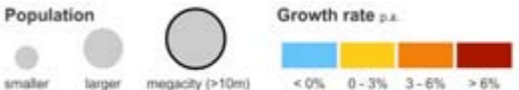
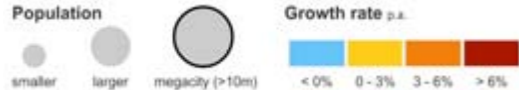


are already high, reflecting the accelerating rural-to-urban migration and natural birth rates in developing regions. The provision of urban infrastructure in these rapidly growing cities will have a significant impact on environmental sustainability and quality of life of urban residents.

(Figure 4.2)



# Growth Of Cities from 1950-2025



1950

2000

1975

2010

1990

2025

(Figure 4.3)

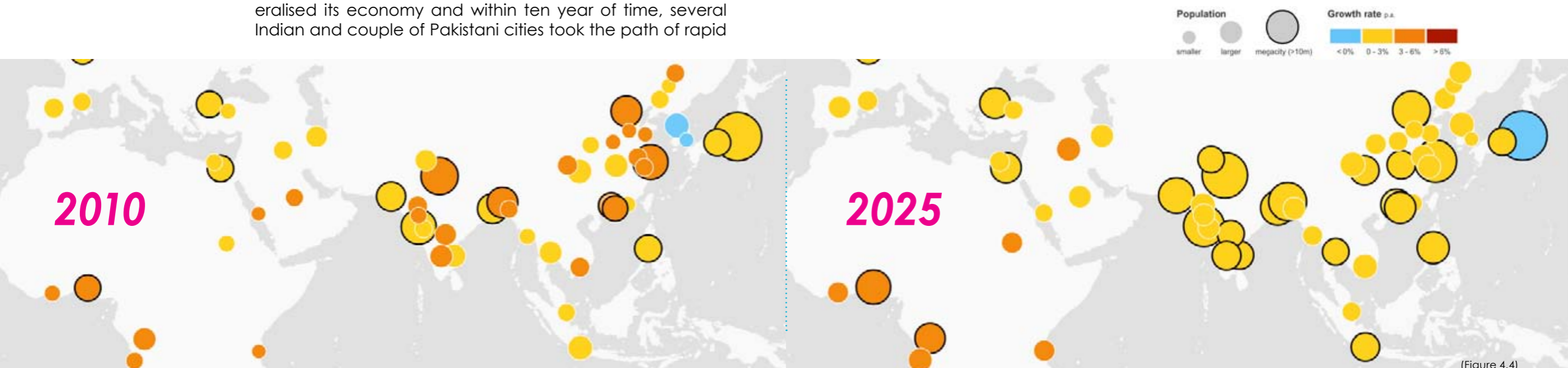
## Growth Of Cities in Asia & Africa

Year 1950 is considered to be the end of first wave of migration. The first map in (figure 4.3) shows the big cities of developed countries have taken the path of slow 0-3% annual growth rate. And as a consequence of World War 2, the cities like London and Berlin were on a shrinking path. Till 1975 most of the developed world cities recovered and embarked on a slow and steady positive growth rate. Tokyo, after being destroyed by the war, showed extreme resilience and grew at substantial speed of more than 3% annually till it reclaimed its title of megacity.

At the same time, post war period and a wave of decolonization of the world initiated the second wave of urban migration in eastern world. Cities in central, south and East Asia got the momentum and since 1950 till now, some of these cities are growing at the fast rate of 3-6% annually. In the year 1990s, China started bearing the fruits of Cultural Revolution (1966-76) and several cities in eastern china showed very fast growth. During the same period India liberalised its economy and within ten year of time, several Indian and couple of Pakistani cities took the path of rapid

growth. From 1975-90s several South American cities from Mexico, Brazil & Argentina demonstrated significant growth. By year 2000, Asia had 9 megacities and several more cities were tunnelling to become one. African countries like Nigeria and Congo also underwent a rapid urbanization phase. And by year 2000, Lagos emerged as the biggest city in mainland Africa.

At present, majority of world urbanization is focused on Africa, Indian subcontinent and China (figure 4.4). In this three regions combine, there are at least 20 cities growing at the rate of 3-6% annually. By 2025 most of the fast growing cities in Indian subcontinent and China will to reach 10 million plus population mark and are expected to adopt a slower growth rate of less than 3% per year. While Africa will add few more fast growing cities and will take some share of urbanization from Asia. Tokyo, after half a century of remarkable growth, is expected to shrink because of its aging population.



(Figure 4.4)



## Fast Growing Cities of Developing World

### Growth of cities from 1950-2025

Istanbul, Turkey  
2025



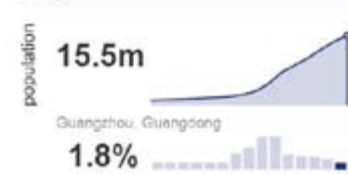
Delhi, India  
2025



Mumbai, India  
2025



Guangzhou, Guangdong, China  
2025



Shanghai, China  
2025



Since 1950s cities from developing world is showing remarkable figures of expansion. Each of the developing country cities mentioned has gone through at least a decade long phase of 6-8% growth rate. At this high growth rate, cities take merely 10-12 years to get double in size.

Since 1950s Mumbai and New Delhi has shown 4 decade continuous growth of at least 6-8% annually. In effete to this long phase of high growth, both the cities have experienced fourfold increase in population in very short period of time. Crumbling under its own weight but still under enormous pressure of country's urbanization rate, both the cities have slowed down to a modest growth rate of 2.3% annual growth. Even at this rate of increase, Mumbai is expected to have population of 26.6 million and Delhi will inch closer to Tokyo with massive population of 32.9 million people by 2025.

Istanbul had a decade of 6% annual growth rate from 1960-70s but after that period it has grown steadily at the rate of 2.5-4% annually. The growth curve of the city is fairly constant and is expected to increase on a milder slope.

On the other end, some of the Chinese cities have shown remarkable growth behaviour. Cities like Shanghai and Gongzhou showed quite modest growth for three decades after 1950s. However, after The Chinese economic reform started in 1978, all the cities took a very aggressive growth path. Both the cities grew for about 8 percent from 1990s to 2000, substantially changing the city scale in a single decade. This trend is, in a way, consistent in several Chinese cities. Cities of modest size of few thousand people suddenly explode to become cities with more than 10 million within a matter of 2-3 decades.

Case of Berlin and Paris is presented here to compare the difference in behaviour or rather to put the growth rate in a familiar perspective. Paris and Berlin are growing at the rate of 0.8% and 0.5% respectively. For city of Paris, the growth has been quite consistent around 1% since 1950s. However, Berlin being a central point of post war politics has shown years of shrinking and growth. On the whole, both the city has quite a gentle curve posing slightly in positive direction. Paris is expected to have 12.2 million and Berlin 3.7 million inhabitants by the year 2025.

Paris, France  
2025



Berlin, Germany  
2025



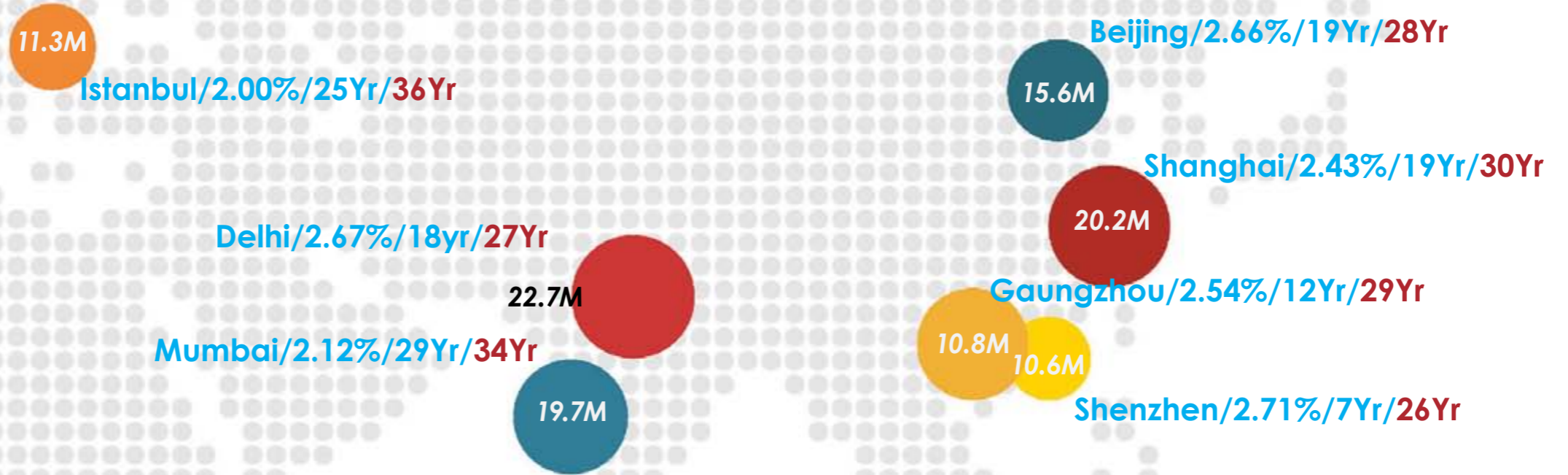
### Case of Shenzhen, China

1985



Shenzhen is a unique growth story even for the Chinese growth pattern. Shenzhen was a city of few thousand people in 1950s and grew at modest rate of 2% per year till 1985 when the population reached 200,000 people. With government's announcement of special economic policy for the region, for the period of 1985-1990s Shenzhen experienced a whopping growth rate of 32.2% per year. City grew almost four times bigger in just a matter of 5 years. After 1990s a decade of 20% growth rate followed which left the city with more than 10 million inhabitants by 2010. The city is expected to grow on a modest rate now and by 2025 the population is expected to cross 15 million inhabitants.

# How long it'll take for our Mega Cities to Double in Size?



City  
Population  
2011
City/Projected Growth %/Years it Took to Double by Population size before 2011/Years It will Take To Double by Population Size

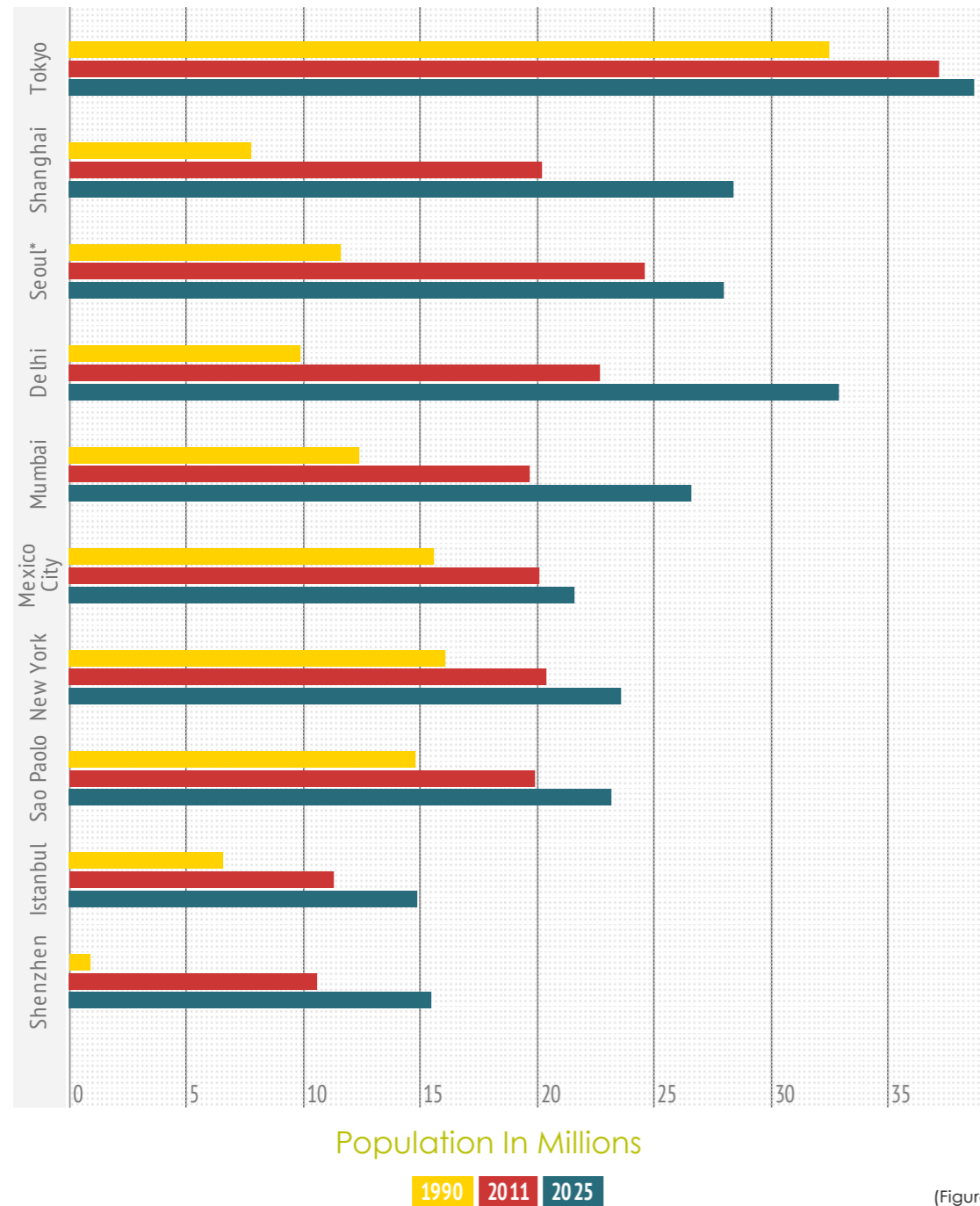
Note - Doubling of the city is conditional on the assumption that the city will constantly grow at the rate of percentage projected by United Nations Department of Economic and Social Affairs. Current percentage projection till 2025, beyond that the rate or growth might increase or decrease depending on the city.

United Nations Department of Economic and Social Affairs/Population Division 5  
World Urbanization Prospects: The 2011 Revision

(Figure 4.5)



## City Size And Projections



(Figure 4.6)

Untill 2030

# CHINA

has to build 5 Million Building Covering 40 Billion Sq.M.

Equivalent to cover entire landmass of Denmark under a single storey structure



Amongst, 50,000 Buildings will be skyscrapers

Equal to New York City **X10**



(Figure 4.8)

Untill 2030

# INDIA

has to build cities of the size of Chicago

EVERY YEAR



For Next 20 years!!!



(Figure 4.7)



## Spur of Cities Across the world

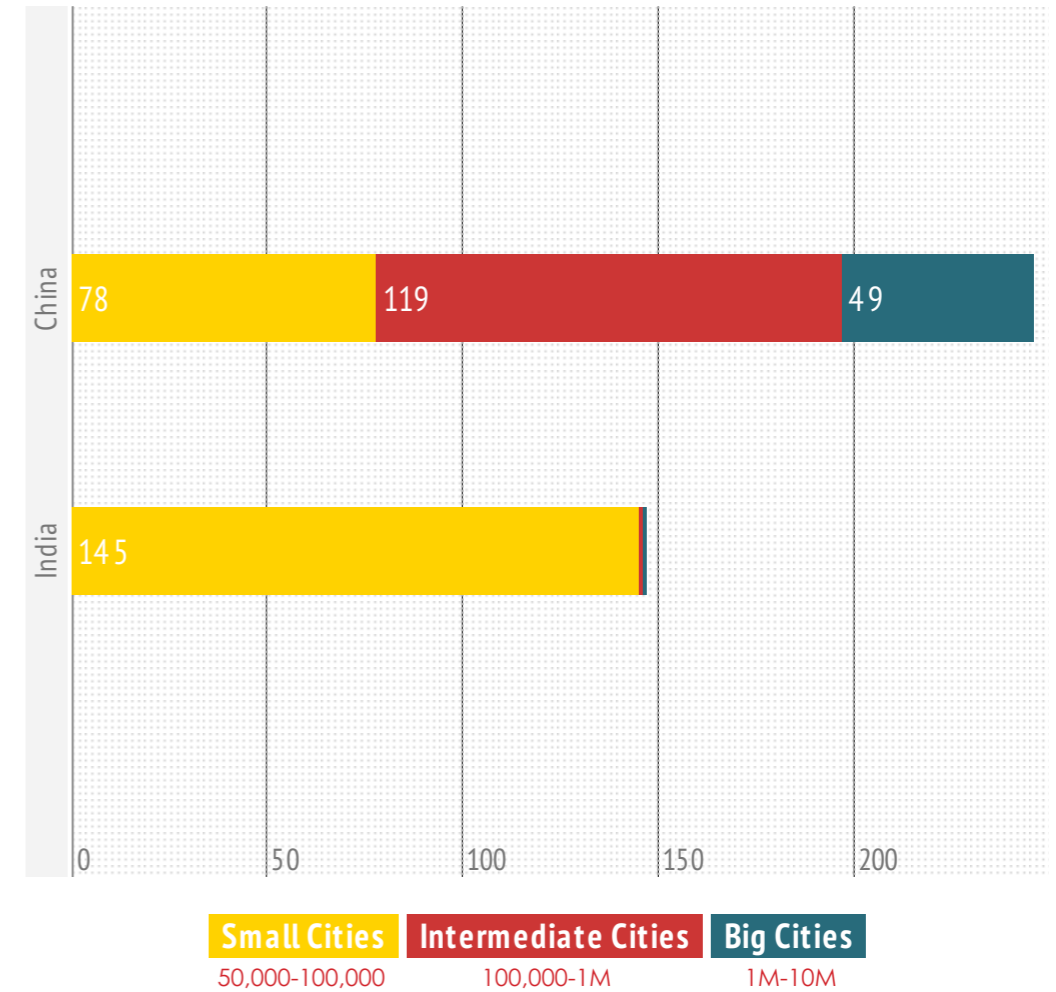
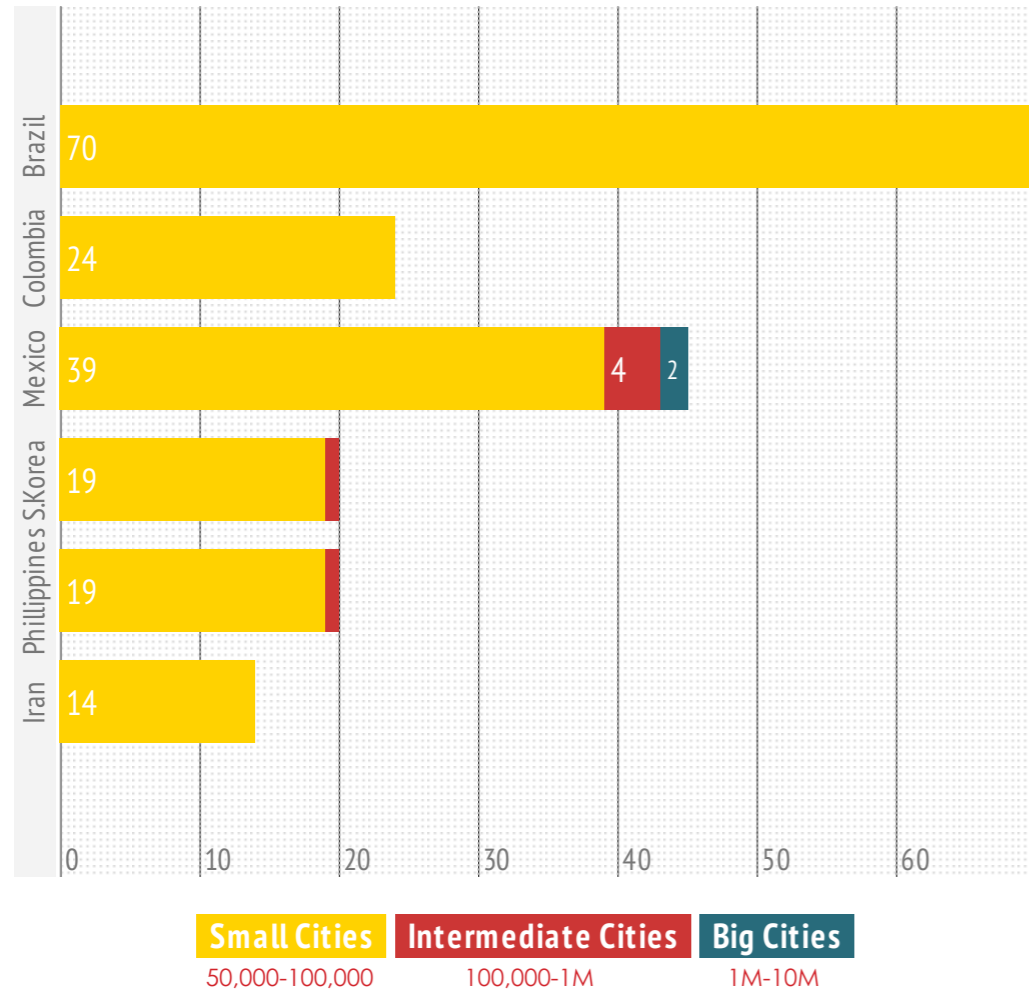
By 1970, the world had only two megacities: Tokyo and New York. Since then their number has increased remarkably and most new megacities have arisen in developing countries. By 2011, Asia has 13 megacities, Latin America has four; Africa, Europe and Northern America have two each. Each of these 23 megacities has a population of more than 10 million. Thirteen of these megacities are capitals of their countries.

The number of megacities is projected to increase to 37 in 2025, at which time they are expected to account for 13.6 per cent of the world urban population. By 2025, Asia would have gained another nine, Latin America two, and Africa, Europe and Northern America one each. This indicates a clear trend of accelerated urban concentration in the world and mainly in Asia.

*While it took London a hundred years to become the world's first megacity, it is now taking just decades for new megacities to emerge. The scale and speed of urbanization is unprecedented. In 40 years' time, three-quarters of the world's population will be city dwellers. This has a profound impact on the ecological balance of our planet and human conditions.*

*Designing our city,  
Planning for sustainable Singapore June 2012*

## Number Of NEW cities after 1990 in the developing world

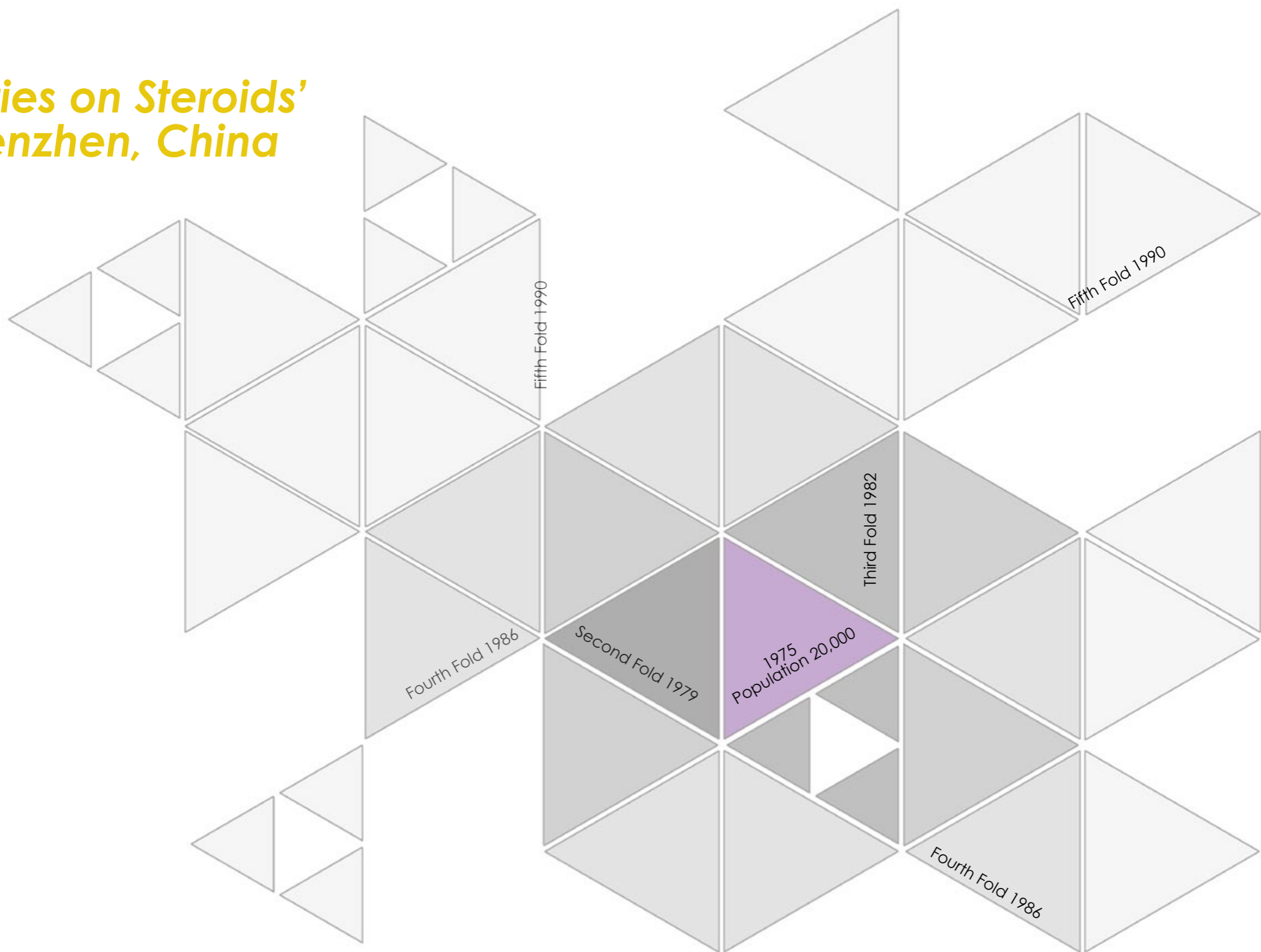


Source: UN-HABITAT Global Urban Observatory 2008

Data source: UN Demographic Yearbooks, various years (1985 - 2004)



# 'Cities on Steroids' Shenzhen, China




(Figure 4.9)

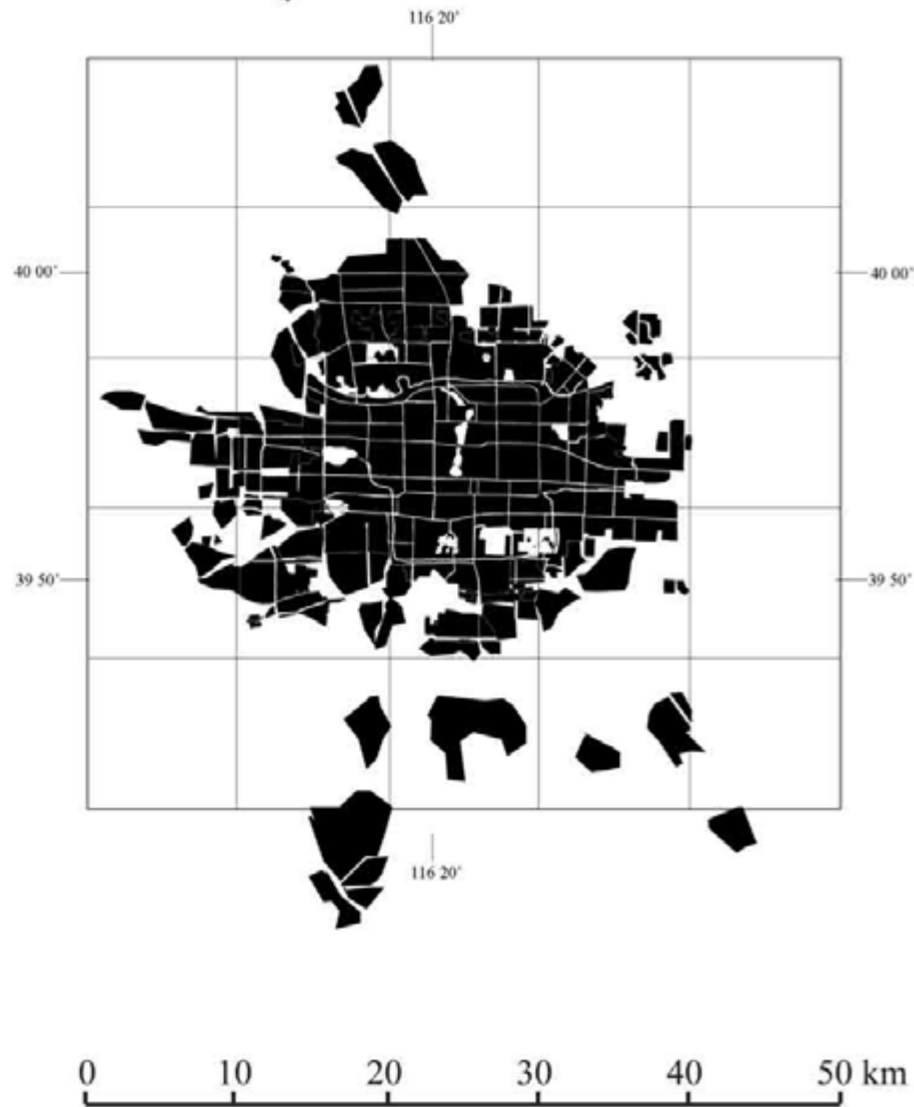
# **'Cities on Steroids' Shenzhen, China**

**From 1970-2011  
The City Grew from  
20,000 Inhabitants to  
10,600,000 Inhabitants**


**In 41 years, Shenzhen  
Expanded 530 Times its  
Original Size**

Beijing, China  
1990

 22.4%  
 571.00 sq. km  
 Population: 7,362,000



Beijing, China  
2010

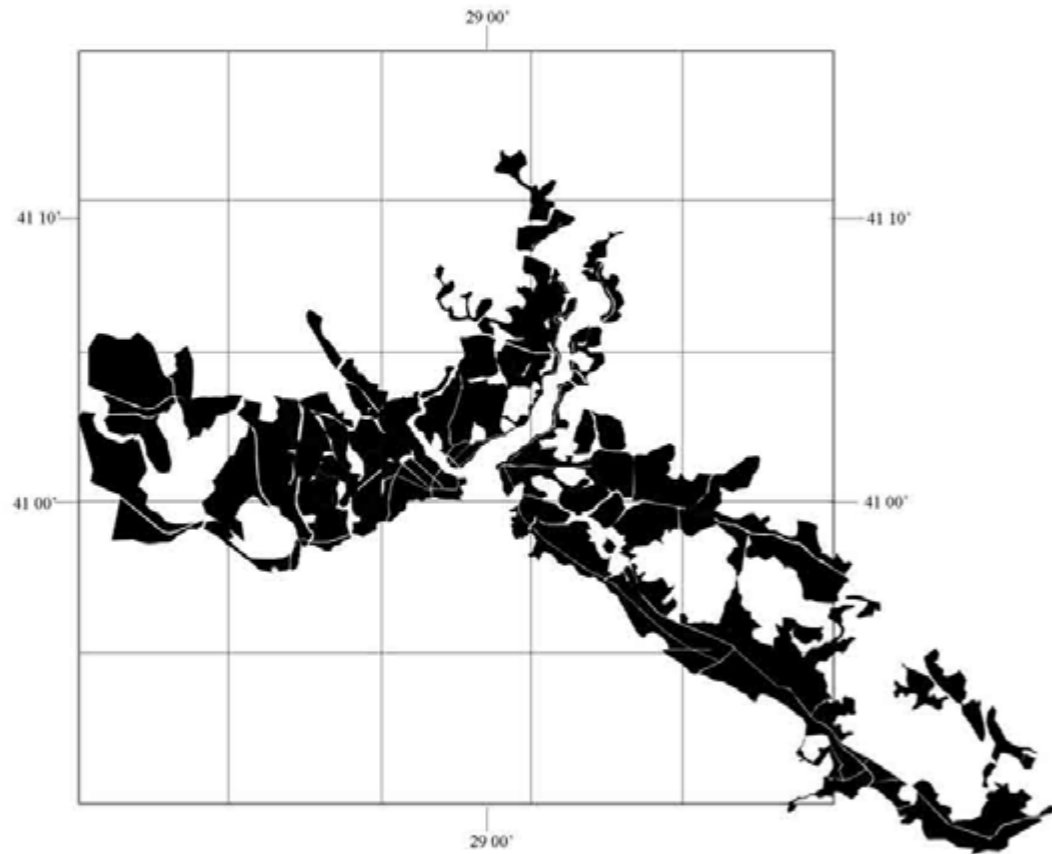
 136.86%  
 3421.51 sq. km  
 Population: 11,741,000





Istanbul, Turkey  
2000

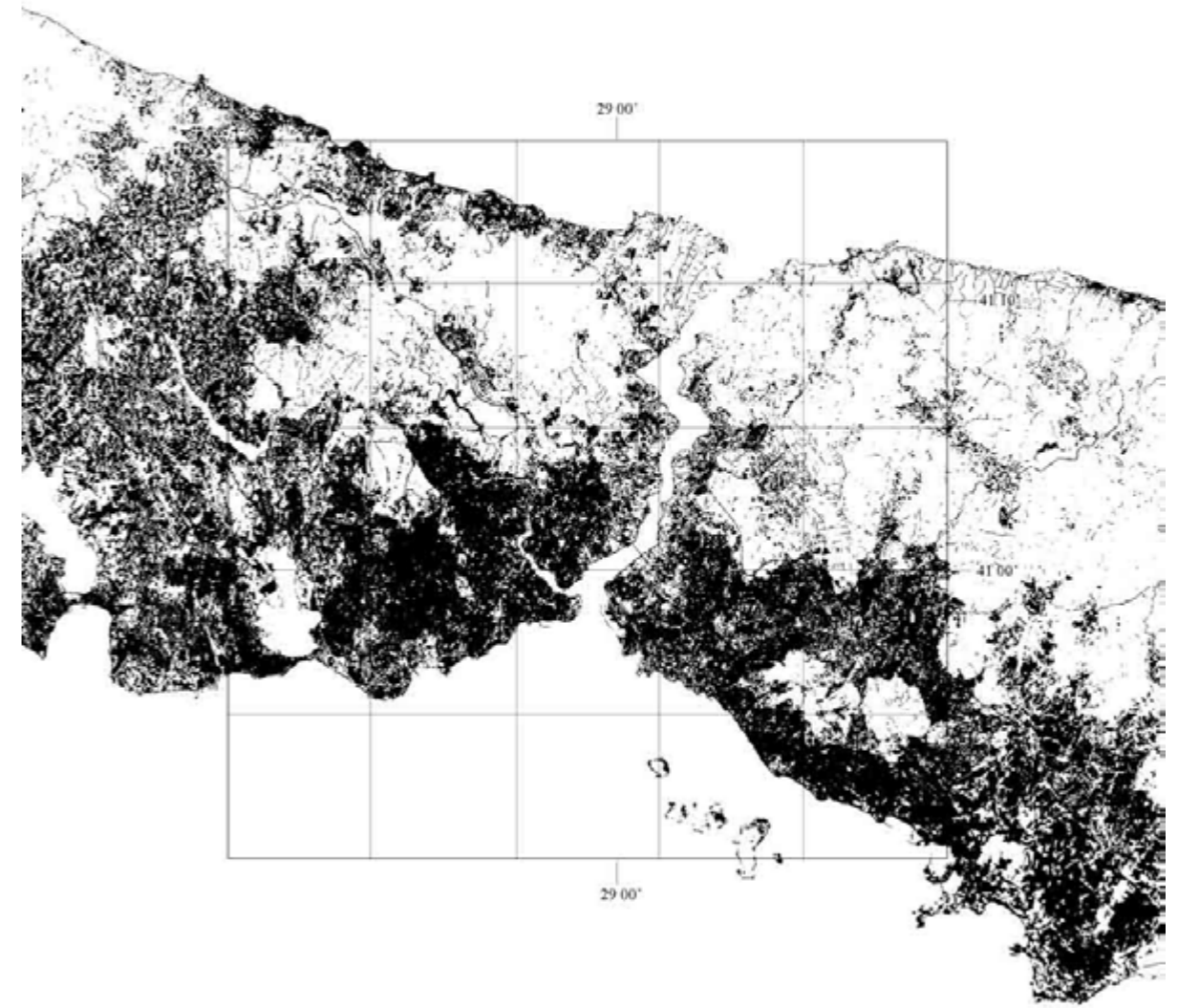
17.2%  
434.5 sq. km  
Population: 8,744,000



0 10 20 30 40 50 km

Istanbul, Turkey  
2005

35.42%  
940.99 sq. km  
Population: 9,709,000



0 10 20 30 40 50 km

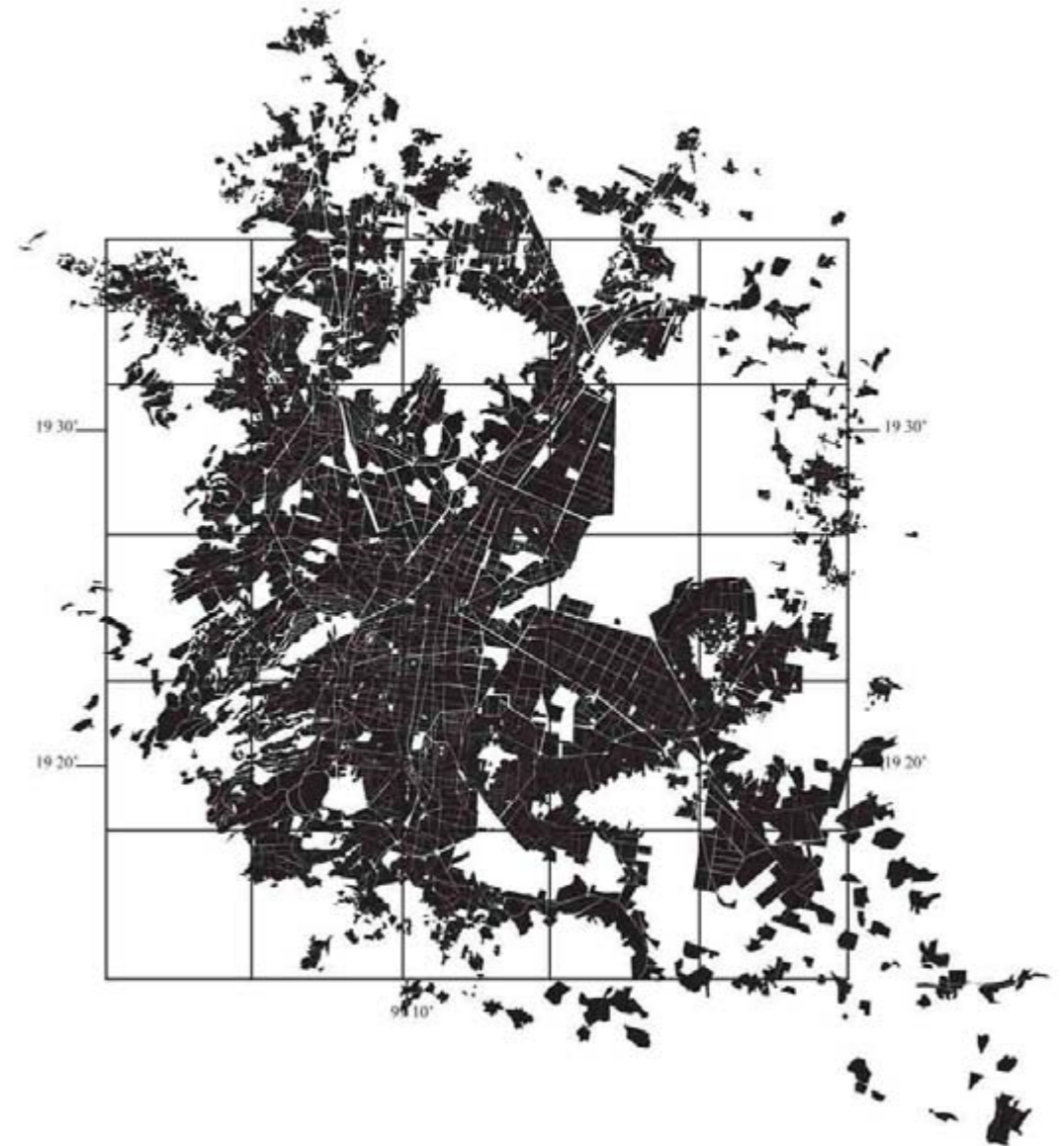
Mexico City, Mexico  
2005

42.42%  
1060.45 sq. km  
Population: 18,735,000



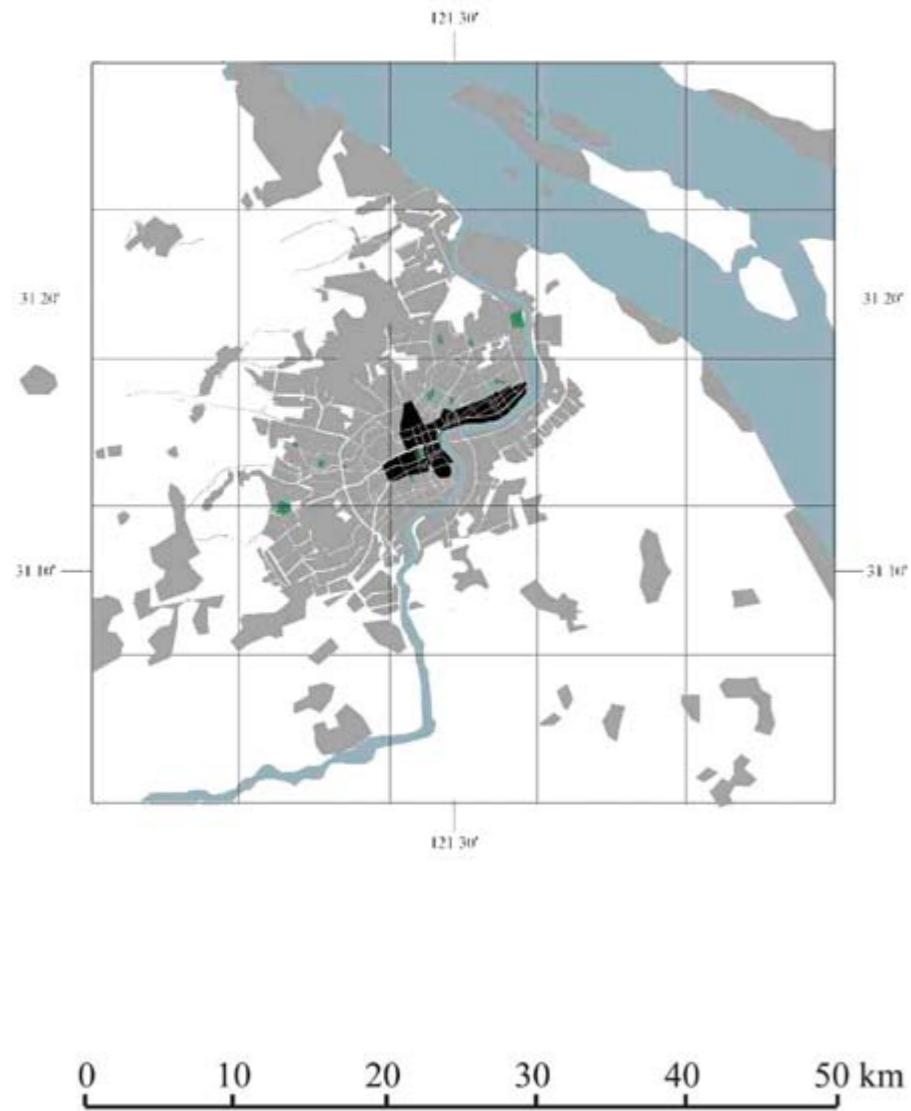
Mexico City, Mexico  
2010

47.23%  
1180.75 sq. km  
Population: 19,460,000

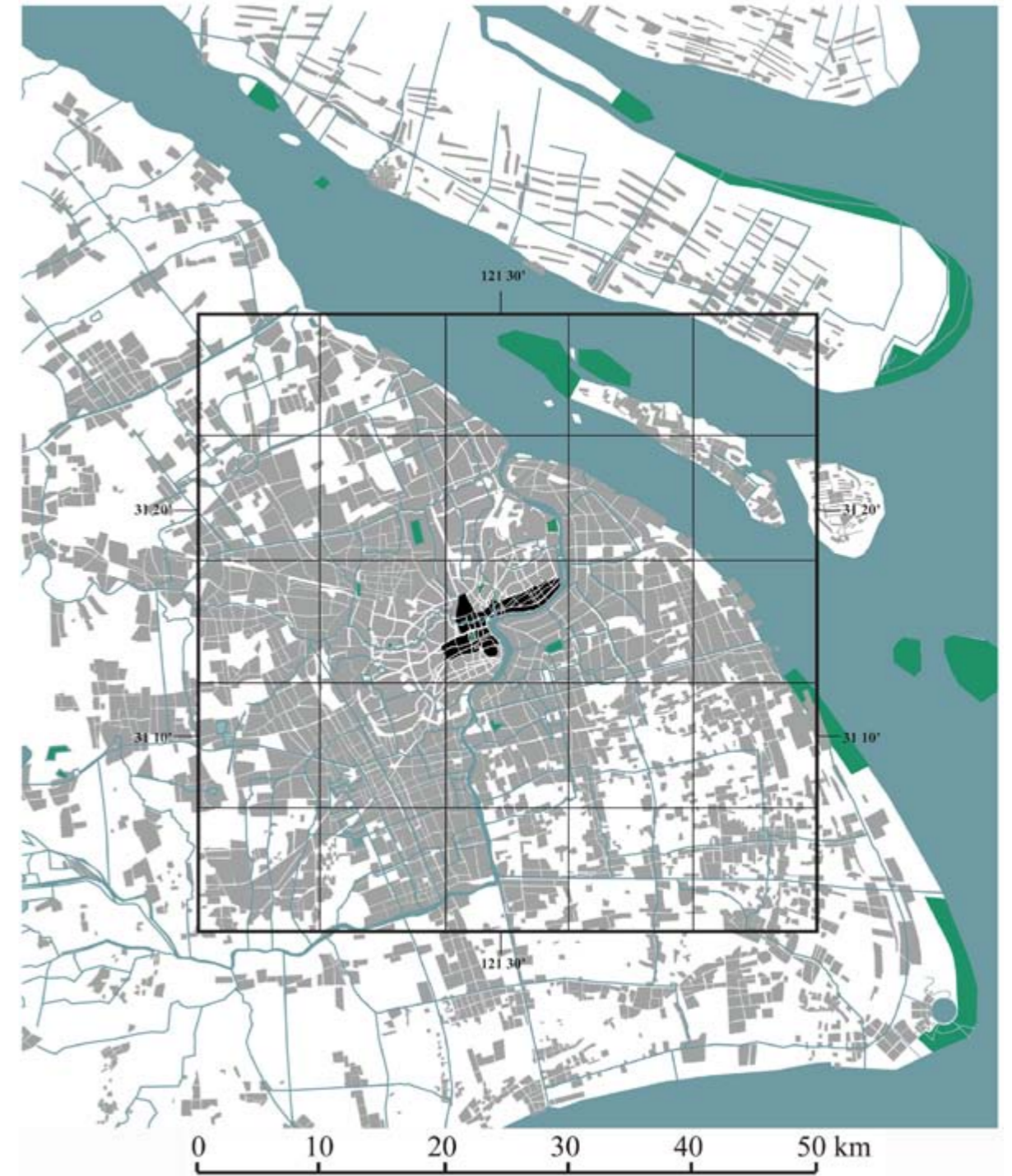




Shanghai, China  
2005

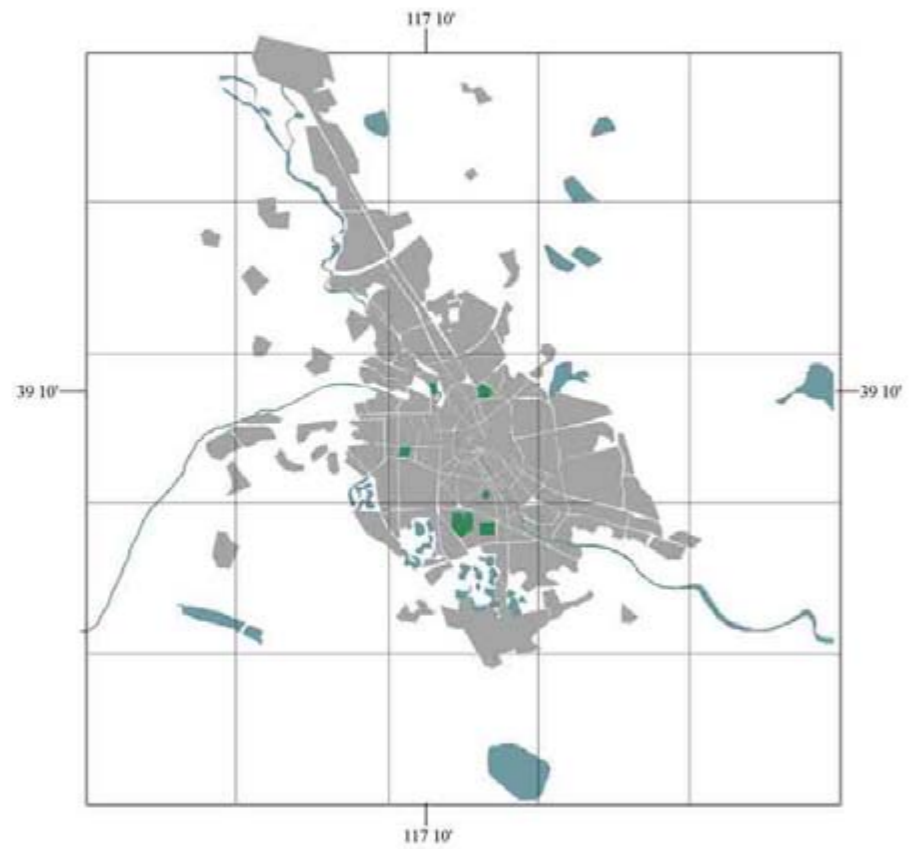


Shanghai, China  
2010

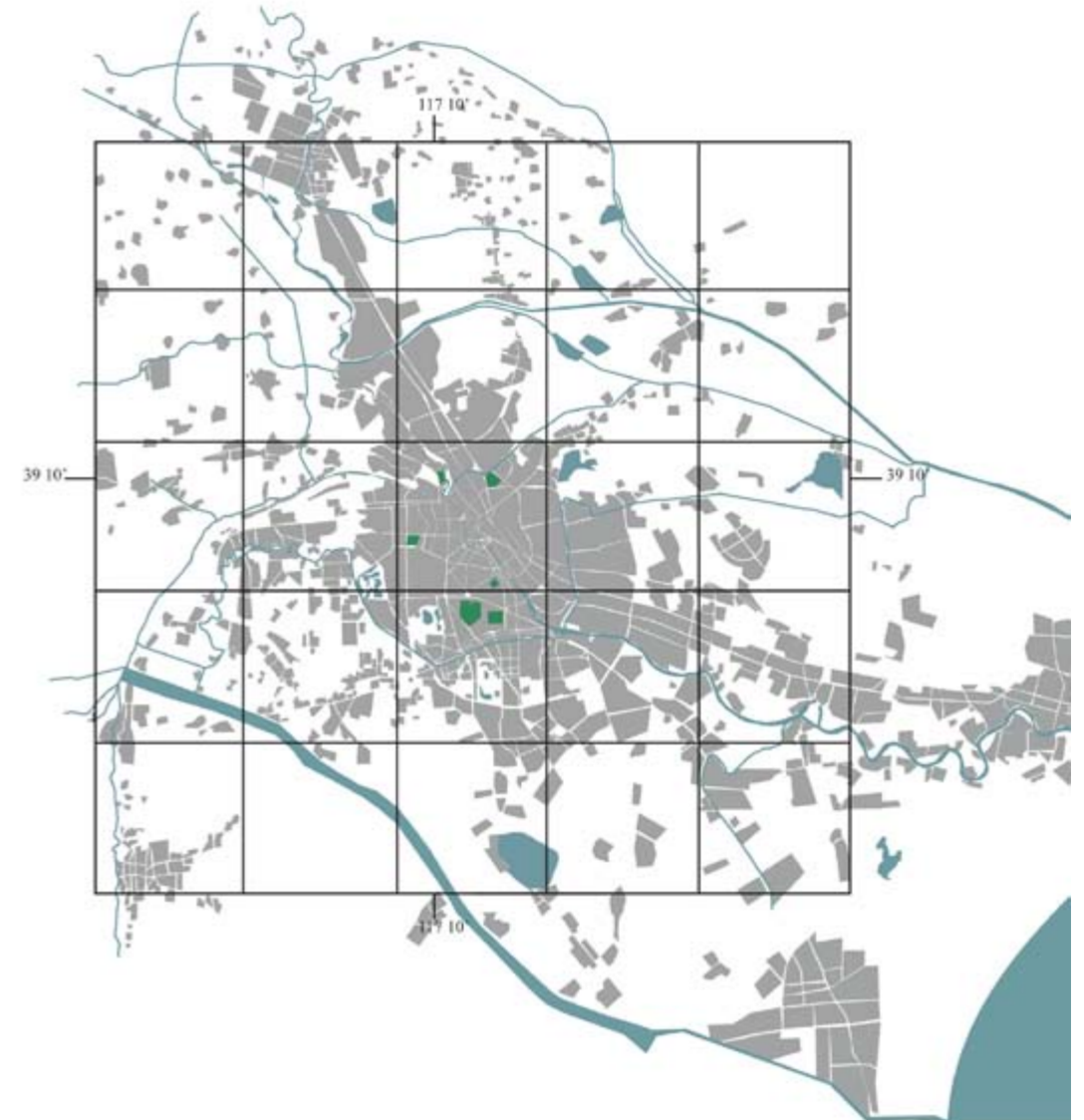




Tianjin, China  
2005



Tianjin, China  
2010





*PRD, China  
One Region*

*120 Million  
People*





# PRD MAIN CITIES

HONG KONG GUANGZHOU, SHENZHEN, DONGGUAN



**GUANGZHOU**

CULTURAL &  
ADMINISTRATIVE  
CENTER



**DONGGUAN**

FACTORIES &  
PRODUCTION  
AREA



**SHENZHEN**

SERVICE  
INDUSTRIES



**MACAU**

CASINO &  
RESORT  
DESTINATION



**HONG KONG**

INTERNATIONAL  
FINANCIAL  
CENTER



# Pearl River Delta

## A Super City

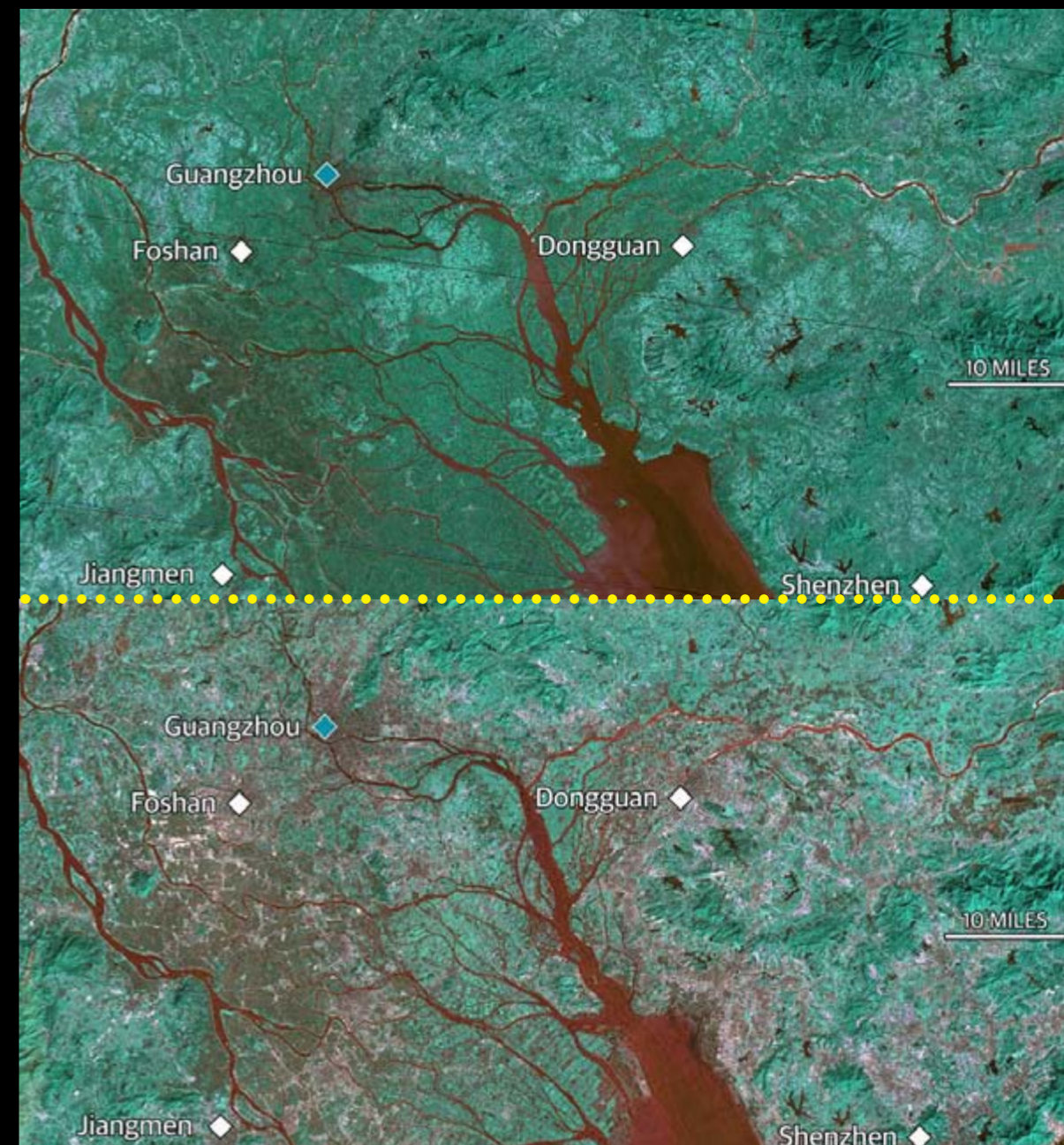
Booming with urban agglomerations and 42.3 million people over a total area of 16,100 sq mi (41,698 km<sup>2</sup>), the PRD is rapidly growing into China's largest megalopolis.

It encompasses nine cities, including four major urban centers: the city of Guangzhou with its more than 2000-year history, the thirty-year-old instant city of Shenzhen, the former British colony of Hong Kong, and the former Portuguese colony of Macao. Located in southern China, the PRD is geared toward massive industry, which is supported by massive mobility infrastructure. The results of these investments are the region's massive contributions to the country's economic boom of the past three decades.

*A popular saying from the time expresses the direct connection between economic growth and mobility infrastructure: "In order to get rich, one must lay a road."*

China is planning a major infrastructural project named "Turn the Pearl River Delta into One" which is due to complete from six years from now (2013) onwards. Upon completion, all the 9 cities will be connected with high speed trains and 6 lane highways. Within the region, there will be several international ports, International Airports and finely integrated railway connections reaching even to neighbouring countries. The connections being developed goes beyond physical infrastructures, logistical and IT connections are also being developed. Upon completion, this 40,000 square kilometres area probably be the best connected region in the entire world. <sup>[1]</sup>

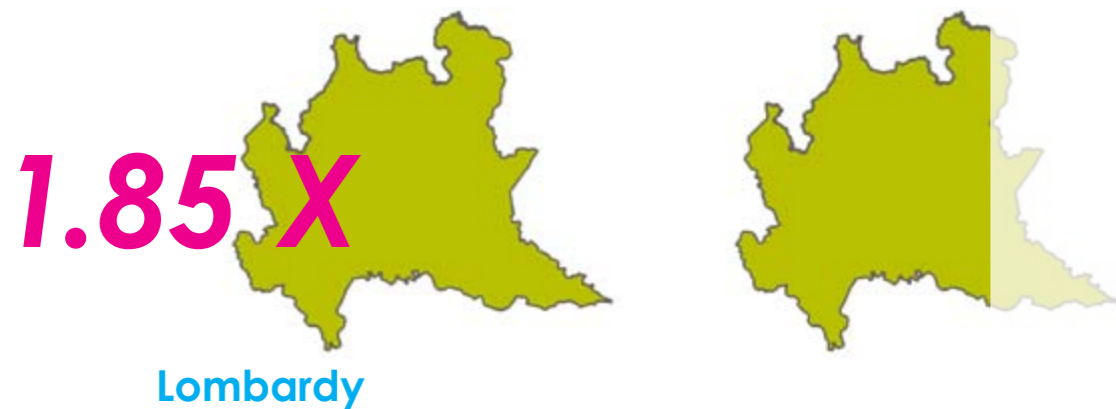
The nine cities to be merged include Guangzhou, Shenzhen, Foshan, Dongguan, Zhongshan, Zhuhai, Jiangmen, Huizhou and Zhaoqing. One-hundred fifty major infrastructure projects will combine transportation, water, energy and telecommunications networks of the cities. A high-speed rail line will also be built to connect the megacity to nearby Hong Kong. The total cost is estimated at \$304 billion. <sup>[2]</sup>



*The Pearl River Delta, north of Hong Kong, has seen some of the fastest urban expansion in history, as these false-colour satellite images from Nasa show. The first, from 1979, was taken a year before the government declared the area around Shenzhen, once a simple fishing village, a special economic zone in an effort to attract foreign investment. The second image shows a staggering transformation has taken place, with much of the Green (representing vegetation) replaced with grey (buildings, roads and car parks).*



### An Urban Region of a Size

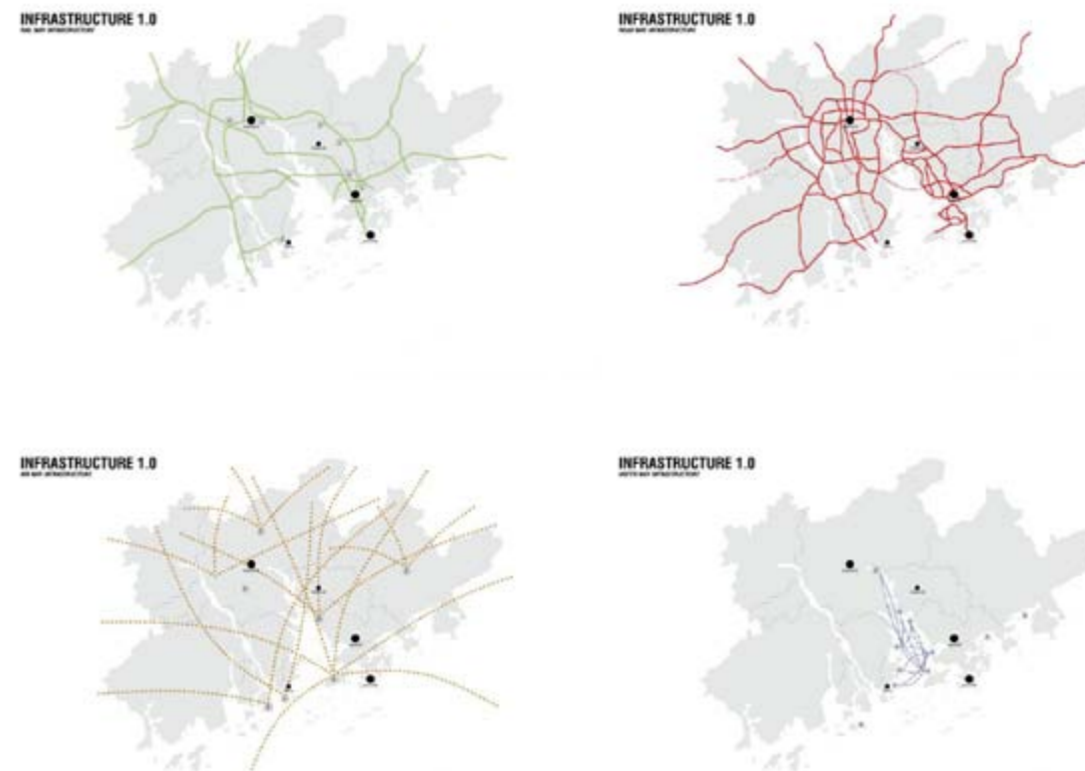


### An Urban Region With Population



Information  
 Area of PRD Region – 40,000 Sq.Km.  
 Area of Lombardy Region – 23,844 Sq.Km  
 Total Expected Population of PRD – 120,000,000 People  
 Italy's population 2012 - 59,685,227 People

### PRD Infrastructural Connections



The nine cities of Guangdong Province are special, as together they constitute China's manufacturing epicenter, accounting for 10% of China's total economy. "Turn the Pearl River Delta into One" is meant to roll these manufacturing all-stars into a single economic juggernaut that can compete with up-and-coming manufacturing competitors Beijing and Shanghai. Today, combine population of all the cities reaches to around 42 Million. In future these cities are expected to meagre and create a mammoth city of around 120 million inhabitants. A scale, our civilization has never ever seen before.

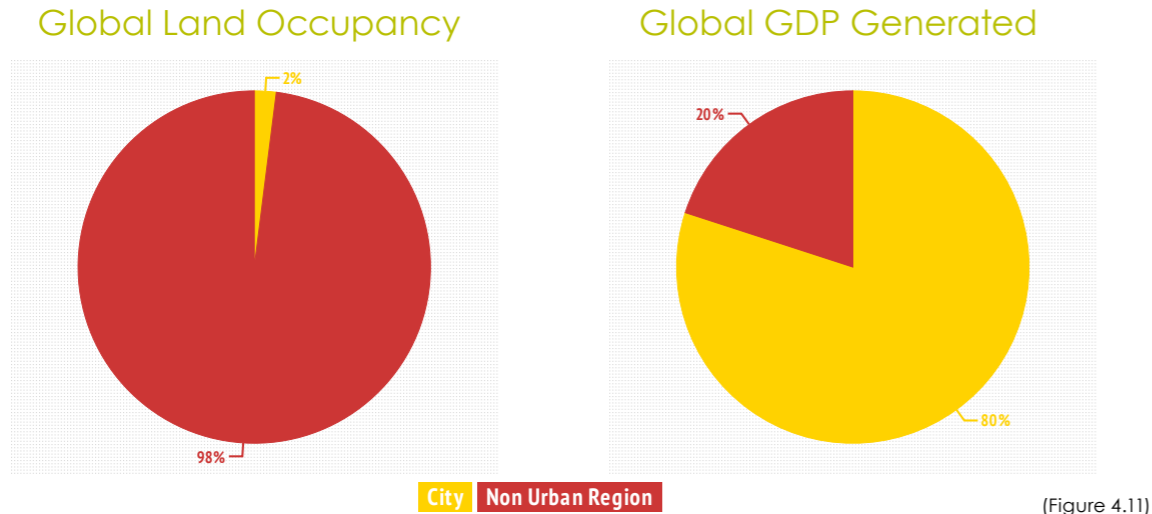
[1]<http://www.guardian.co.uk/global-development/interactive/2012/oct/04/rise-of-megacities-interactive>  
 [2]<http://www.guardian.co.uk/world/2010/mar/22/un-cities-mega-regions>

# *THE POWER of Cities*





## Economic Might of Cities



(Figure 4.11)

*The cities occupy only 2% land area and they are responsible for more than 80% of world economic activities.*

Cities have long been the world's economic dynamos, but today the speed and scale of their expansion are unprecedented. Through a combination of consumption and investment in physical capital, growing cities could inject up to \$30 trillion a year into the world economy by 2025. Understanding cities and their shifting demographics is critical to reaching urban consumers and to preparing for the challenges that will arise from increasing demand for natural resources (such as water and energy) and for capital to invest in new housing, office buildings, and port capacity.

Major urban areas in developed-regions like New York, London, Paris are, without doubt, economic giants. Half of global GDP in 2007 came from 380 cities in developed-regions, with more than 20 percent of global GDP coming from 190 North American cities alone. The 220 largest cities in developing-regions contributed another 10 percent.<sup>[1]</sup>

There are 23 mega cities in the world at present which share 14% of entire world's GDP. However, its the second and third tear cities which accounts for at least 40% of world GDP. This share will incense to more than 50% of world GDP by 2025. Among those 577 middleweights—cities with populations of between 150,000 and 10 million, 13 cities will expand to make through the list of mega cities by 2025.

The survey called 'The Rise of the Mega-Region' conducted by Richard Florida, Tim Gulden & Charlotta Mellander projects that cities, apart from being economical hub, are also the breeding ground for science and technology. It underlines that top 40 cities in the world are responsible for 85% of Scientific and Technological innovations in the world.

### Second Tear Cities

440 Middleweight cities (out of top 600)

A reserch in McKinsey Global institute suggests that by year 2025, 20 megacities will generate almost \$6 Trillion of GDP growth. That's roughly 7.6 percent annual compound rate that far outpaces the 4 percent rate anticipated for the global economy as a whole. Among the 20 megacities will be Sao Paulo in Brazil; Moscow in Russia; Mexico city in Mexico; Istanbul in Turkey; Lagos in Nigeria; and Dhaka in Bangladesh. Of the remaining 14 megacities, six will be in china and three will be in India.

The emerging 440 middleweights are a diverse group that includes cities in 57 countries and spans all continents. Together, they are expected to incense their GDP at double the global average GDP growth rate at an 8 percent annual compound rate. It is estimated that these cities will account \$24 trillion in GDP growth by 2025, 47% of World GDP.

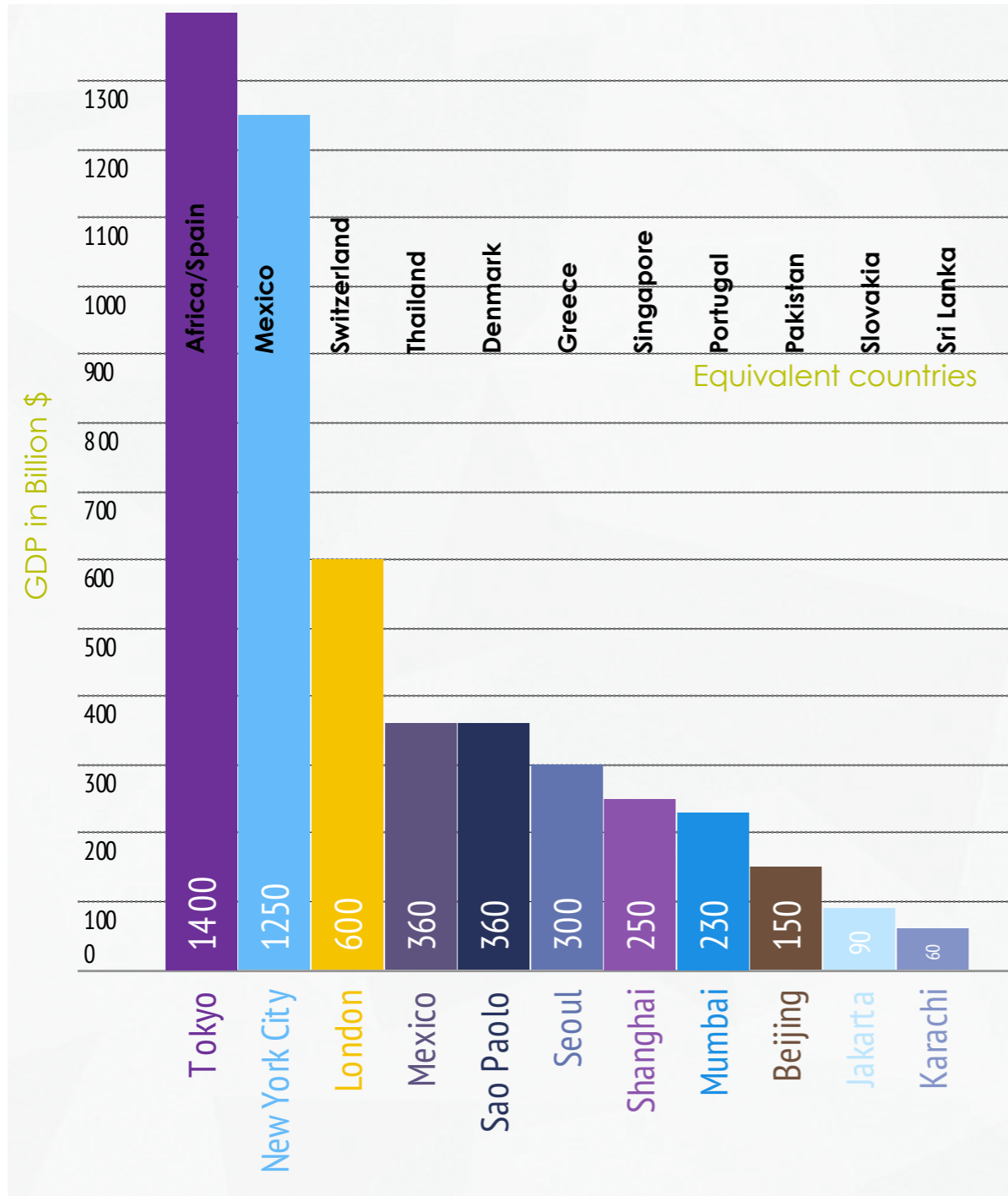
*Middleweight cities will share 47% of world GDP*

*Where are these middleweight Cities?*

*236 - China  
53 - Latin America  
28 - India  
37 - Africa & Middle East  
86 - Europe and North America*

## Economic Might of Cities

### City GDP & Equivalent Countries



Economic activities in the world are concentrating to urban regions. These regions are becoming stronger by each passing day and by each incoming migrant. These cities have developed extremely complex networks with world economy, generating billions of dollars of annual gross domestic products. Some of the mega cities like Tokyo generates one quarter of entire Japan's GDP, annually. Economical cloud generated by these mega cities is enormous in scale.

These established mega cities in the world have grown up to be so strong that the GDP generated by these cities are much higher than entire countries. In one case, Tokyo's 2011's gross domestic product of \$1.44 trillion is almost equal to 2009's \$1.47 trillion of combine gross domestic product of all the countries in African continent.<sup>[1]</sup>

In other words, Tokyo can be swap for the entire African continent or Uk might consider exchanging London for Switzerland!

**EMERGING ECONOMIES MIGHT DOMINATE GLOBAL ECONOMIC GROWTH FORECASTS, BUT TWO STUDIES SUGGEST THE WORLD'S ESTABLISHED TOP CITIES WILL CONTINUE TO DRAW THE WEALTHY FOR SOME TIME TO COME.**

[1] International Monetary Fund data, 2011



# *Urbanization & Sprawl*





## What is Urban Sprawl?

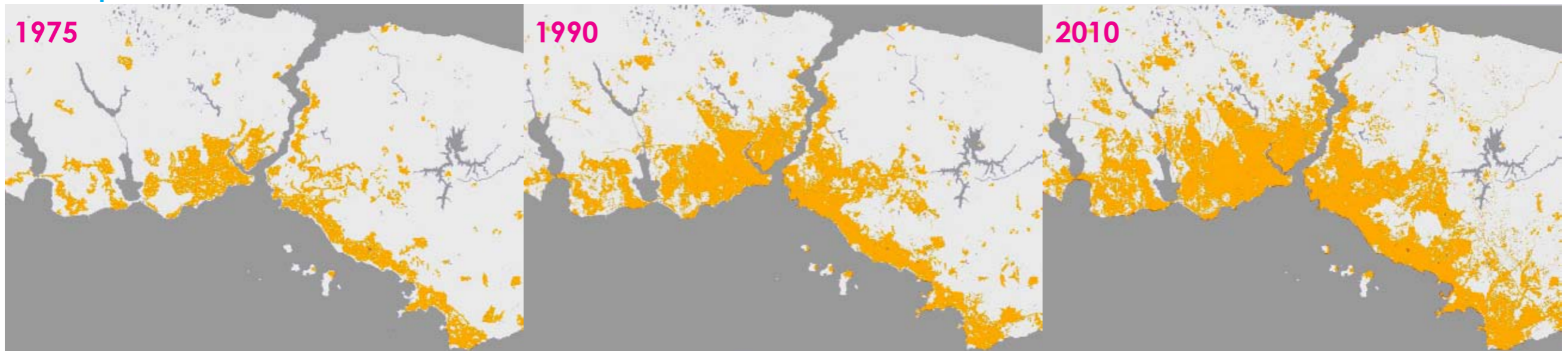
*“The way cities have grown since World War II is neither socially or environmentally sustainable and the environmental cost of ongoing urban sprawl is too great to continue.”<sup>[1]</sup>*

For the long time, phenomenon of Urban sprawl was associated with North American cities' where middle income, high income families choose to live in very low density settlements on the fringes of the city, in pursuit of a “world class lifestyle”. However, in developing or poor countries, urban sprawl is completely different phenomenon.

In many developing countries, urban sprawl comprises two main, contrasting types of development in the same city: one is characterized by large peri-urban areas with informal and illegal patterns of land use. This is combined with a lack of infrastructure, public facilities and basic services, and often is accompanied by little or no public transport and by inadequate access roads.

The other is a form of “suburban sprawl” in which residential zones for high- and middle-income groups and highly-valued commercial and retail complexes are well-connected by individual rather than public transport.

### Urban Sprawl in Istanbul



Karen Seto,  
Associate professor of the urban environment at Yale University.

More and more people are moving outside the city to “satellite” or dormitory cities and suburban neighbourhoods, taking advantage of accommodation that can be more affordable than in central areas, with lower densities and sometimes a better quality of life in certain ways. Spatial expansion of cities is triggered not only by residents' preference for a suburban lifestyle, but also by land regulation crises, lack of control over periurban areas, weak planning control over land subdivisions, improved or expanded commuting technologies and services, as well as greater population mobility. Whether it takes the form of “peripherization” (informal settlements) or “suburban sprawl” (residential zones for high- and middle-income groups), sub-urbanization generates negative environmental, economic and social externalities. In developing countries, the phenomenon comes mainly as an escape from inadequate governance, lack of planning and poor access to amenities. Rich and poor seek refuge outside the city, which generates further partitioning of the physical and social space.

*Cities must aim policies at current urban challenges (slums, affordable land, basic services, public transport) and more particularly anticipate expansion with sound planning policies and related actions that control the speculation associated with urban sprawl. Cities must also grant rights to the urban poor, along with affordable serviced land and security of tenure if further peripherization is to be avoided.*

- UN Habitat



## Driving Forces

**Poor Governance**

*Middle Class Sprawl*

**Lack of cohesive policies**

Suburbanization is generally driven by urge to buy low cost personal family houses seeking an ideal lifestyle. People tend to take advantage of relaxed building rules of suburban towns to get bigger and probably low quality family houses. More often the only way of commuting through these suburbs is by using private transport.

**Economic Forces**

**Economical Inequality**

**Social Divide**

**Prevalent Social Classes**

**Poor access to amenities**

*Urban Poor Sprawl*

Urban sprawl involving the poor occurs because authorities pay little attention to slums, land, services and transport. Authorities lack the ability to predict urban growth and, as a result, fail to provide land for the urbanizing poor. In addition, the urban poor are denied land rights which is one of the main factors driving people to the periphery of towns, associated with urban sprawl in developing countries.

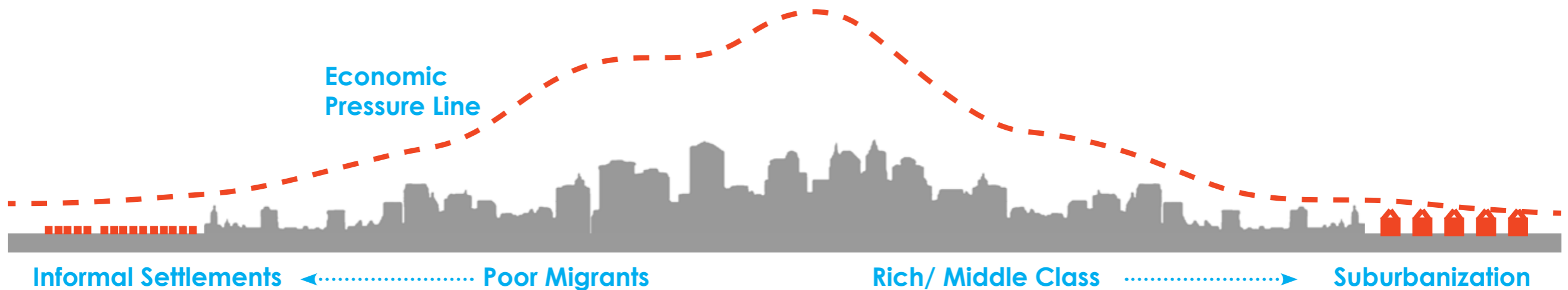
## Outcome Of Sprawl

Urban sprawl has a negative impact on infrastructure and the sustainability of cities. In most cases, sprawl translates to an increase in the cost of transport, public infrastructure and of residential and commercial development. Moreover, sprawling metropolitan areas require more energy, metal, concrete and asphalt than do compact cities because homes, offices and utilities are set farther apart.

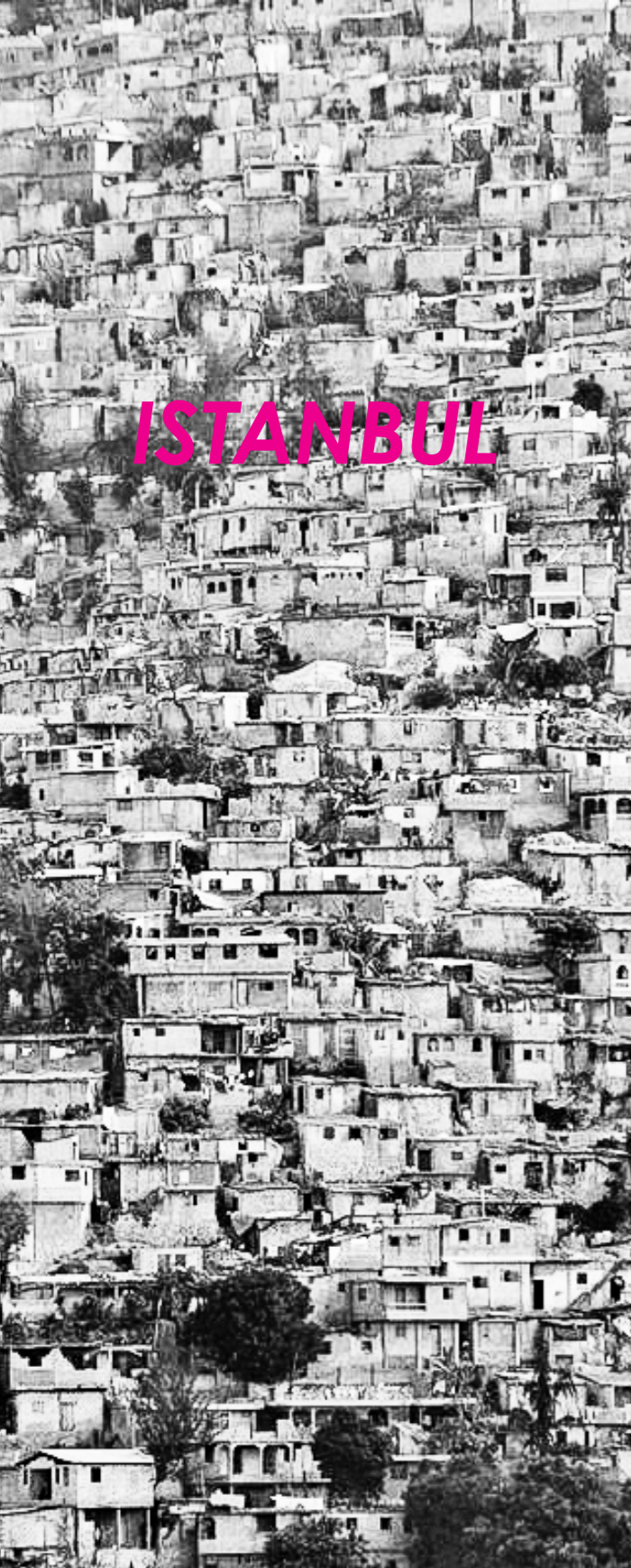
In many places, urban sprawl encourages new developments that cause significant loss of prime farmland. When cities are improperly planned urban sprawl also adds to environmental degradation. Such is the case around several cities in Latin America where sizeable damage has been caused to environmentally sensitive areas. These include Panama City (Panama) and its surrounding Canal Zone, Caracas (Venezuela) and its adjacent coastline, San José de Costa Rica and its mountainous area and São Paulo (Brazil) and its water basins.

*“Urban Sprawl is a symptom of divided, dysfunctional City.”*

*United Nations*







**ISTANBUL**



**SAO PAULO**



**MUMBAI**



**SAN FRANCISCO**

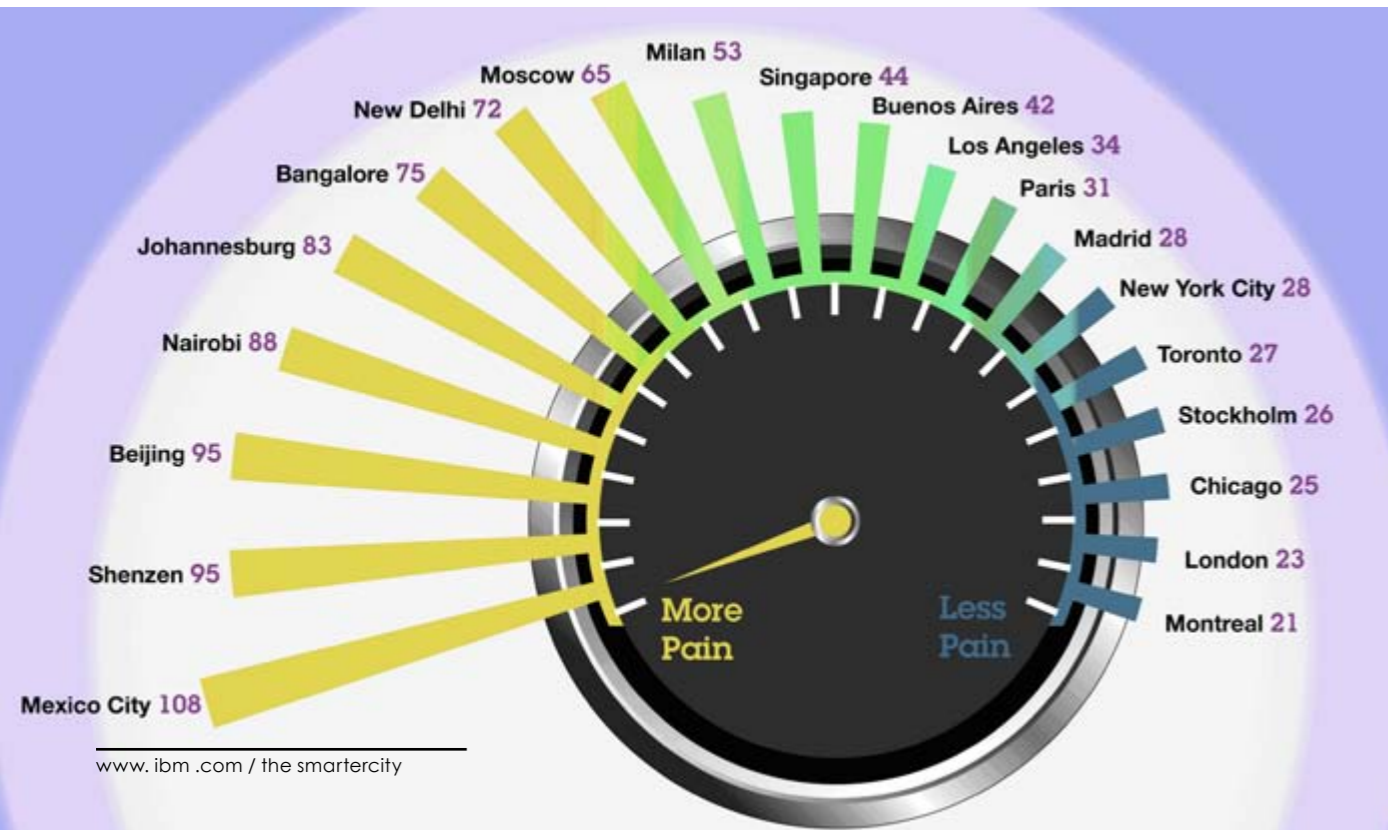


## Sprawl & Commuting



Developing countries sprawl is quite different from the developed country's sprawls. Urban sprawls in the countries like United States, Australia and Canada are generally followed by already developed strong transportation network. On contrary, developing countries like Brazil, South Africa, India and China, urban sprawl is a symptom of high urban migration combine with incompetence of development authorities. In third world, sprawls are often unplanned and illegal settlements. It's a situation where thousands of people are living without adequate transport infrastructure. Hence, commuting in the third world sprawling city can be a commuter's nightmare. IBM Smart City organization undertook a survey to know the "Commuter's pain" in big city. And the results are quite as expected.

### Commuter Pain Index By IBM



Cities like London, Chicago, Madrid & Paris which took sufficient time to grow with the active inputs from the planners shows that they are least painful for commuters. On the other end the survey in developing countries' fast growing cities like Mexico City, Johannesburg, Beijing, Shenzhen & New Delhi shows that they are quite painful for daily commute.

Moreover, the data of car ownership per 1000 person also shows that the sprawling cities like Sao Paulo and Mexico City has quite high car ownership rate, even higher than cities of developed countries. This phenomenon is a symptom of urban sprawl.

Another survey from IBM Smart City shows that the situation of traffic is already so festering for some cities that inhabitants, as far as 40% in case of New Delhi, chose to work rather than getting stuck in to the peak hour traffic.

### I should rather be working!

Cities & percentage of citizens prefer to work rather than driving home in rush hour.



An aerial photograph showing a large, rectangular suburban housing development in the foreground. The houses are arranged in a grid-like pattern with winding streets. The development is surrounded by green fields and a large, flat, brownish area. In the background, there are rolling hills and mountains under a clear blue sky.

# A City?

*In reality, the Suburban sprawl is completely contrary to city values. There is no interaction, sense of community, sharing of ideas and economic opportunities. All the vital aspects of a good city are clearly missing from these settlements.*

# Where?

**EXURBAN DEVELOPMENT, South Jordan, Salt Lake City, Nevada, United States**

Photo Courtesy - Alex S. MacLean

[http://www.alexmaclean.com/#/exhibitions/lavenir-du-futur/GABRIELLE\\_050618-0059](http://www.alexmaclean.com/#/exhibitions/lavenir-du-futur/GABRIELLE_050618-0059)



## Case of Mexico City

### A city of Arteries

Till the eyes can see, there is house after house after house. Mexico City is a prime example of, what can go wrong when government ignores or miscalculates the urban migration in to the city. Mexico City is the biggest city in Mexico with population of more than 20 million. The city is also the biggest economical hub of the country.

Since 1950s, people looking for better future and economical opportunity are migrating to Mexico City. Initial small scale migration soon turned in to an uncontrolled wave of migrants looking for livelihood. Being a poor country, Mexico City government did next to nothing to help the incoming migrants and what followed was a sprawl of slum all around the city. Today, 20% of Mexico's population lives in the city which covers 1% of entire countries landmass.

Incoming migrants helped themselves by creating informal settlements with no planning inputs from the authorities. Each household built a single unit keeping minimum road width around the house for the access. Mexico City lies on an earthquake fault line which destroyed a large part of informal settlement in 1985 earthquake. People of the Mexico City learnt from the experience and resulting redevelopment was low rise and city sprawled even wider on the planes.

The speed and scale of the development was so fast that the authorities proved to be completely incompetent to help the migrants. Even today, some of the residential areas have to rely on water tanker to get the daily supply of drinking water.

These vast sprawling settlements are connected with each other with a stupendously complex network of small arterries. Providing public transport to all the areas is next to impossible, hence Mexico City has one of the highest car ownership rates in the world.





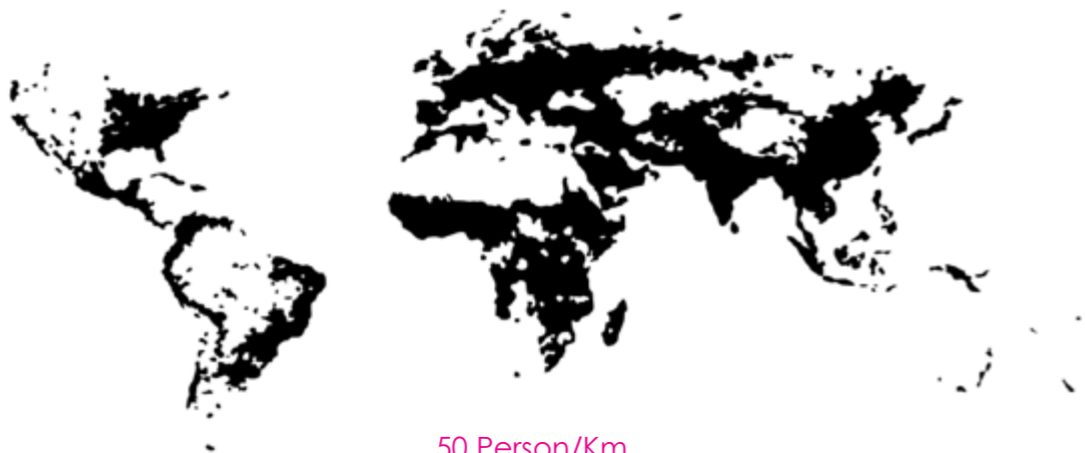
*Density*





Area with Population Density Person/Kilometre

5 Person/Km



50 Person/Km



100 Person/Km



Area with Population Density Person/Kilometre

200 Person/Km



300 Person/Km



400 Person/Km



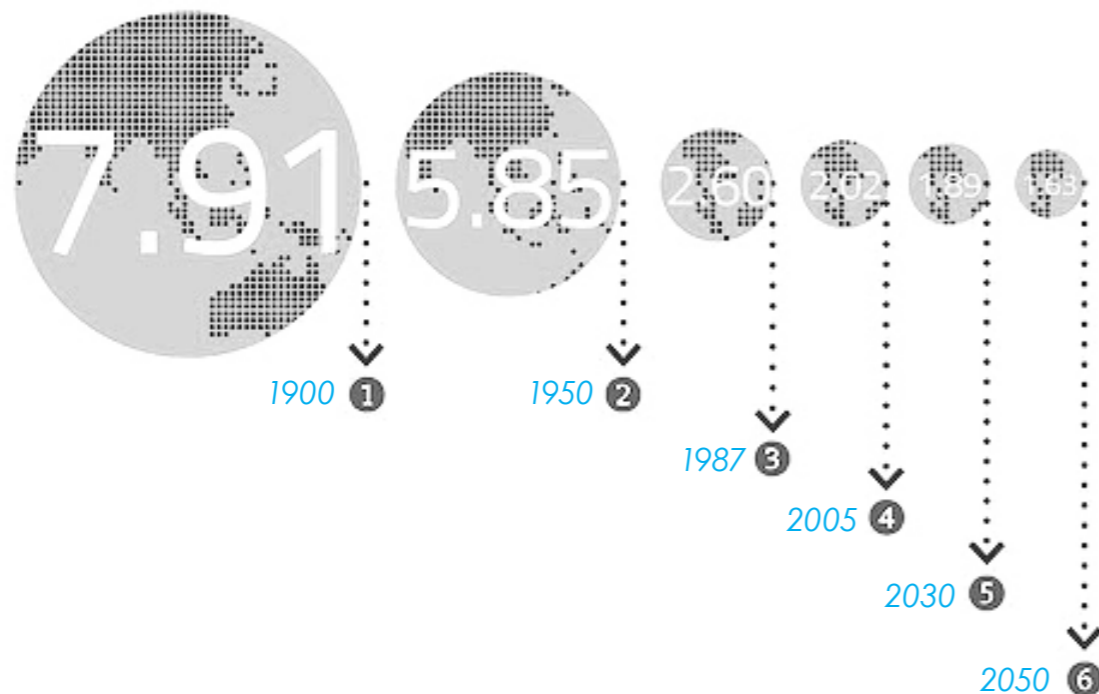
(Figure 6.1)

## Human Density

Human Density is a measure to demarcate number of people in a unit area or volume. World, as we see in figure 6.1, is sparsely dense. In the first image, we can see most of the world inhabited, however the density of majority of the places are as less as 5 people per square kilometre. But on the other end, not all the places on earth are suited for habitation. For the same reason, world's population is huddled in to the areas which are most suited for human habitation.

Probably the second Image of figure 6.1, with the density of 50 people per square kilometre, is the most representative of our world. North and South America are populated on the fringes of the continent. Europe, historically, densely populated and Africa again populated on the fringes avoiding the inhospitable Sahara desert. India and east Asian countries with high density with their tropical climate and more hospitable environment and the densely populated regions of Eastern China, avoiding cold dry climate of central mainland.

## Hectare of land available per capita



Today's world looks little different than this diagram which is made through the population data of year 2010. World density are constantly changing in one direction, human beings are concentrating in to urban areas. These urban areas are the places where extremely high comparative density is registered. Our urban areas takes just 2% area of our total land mass and they are holding more than 50% of the world population to date.



## Cities & Urban Density

Density — the close clustering of people together in communities — is a big factor in the technological and economic progress of cities and nations. Even though 'Urban Density' is a neutral unit of measurement, in urban terms, it has some inexplicable aspects attached to it. Economists, urbanists and planners have found density to be associated with everything from greater energy efficiency to higher levels of skilled and talented people, higher rates of innovation, and higher income.

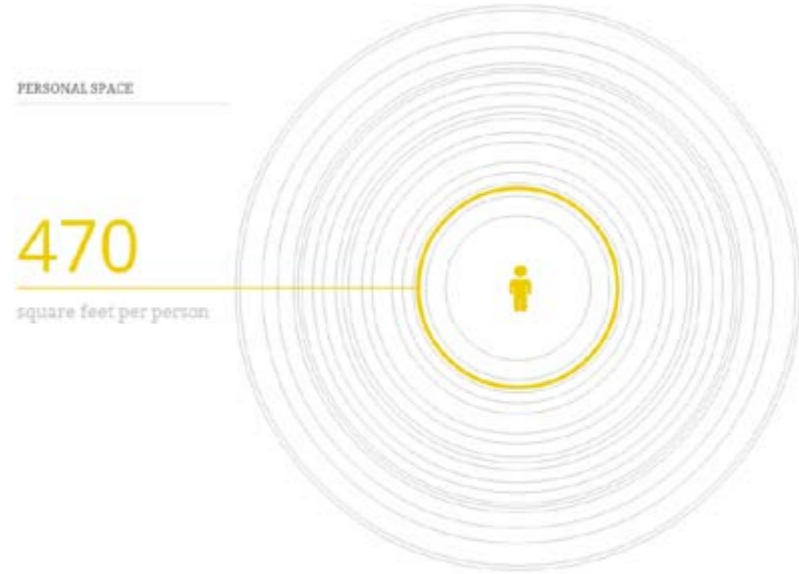
Urban sociologists like Jane Jacobs, in her studies of urban conditions, have argued that in denser cities clusters of talented and ambitious people increase one another's productivity and the productivity of the broader community, spurring economic growth. Diversity is more likely in places where density is more concentrated, hence it can offer more opportunities and possibilities to the citizens. Occupations like arts, media and entertainment, science and technology, and business and management are strongly associated with density, and especially in metros that are more densely concentrated at their cores.

However, getting density right is an issue in itself. Quality of life, irrespective of positive or negative, changes to a large extent when density changes. For example a 10 minute walk in a small town with low density is completely different from walking for 10 minutes in downtown Manhattan.

Density is a key factor in both the growth of cities, the happiness of cities, and the wealth of nations. And cities and regions where density is more concentrated near their urban cores — appear to gain the biggest economic advantage.



# Cities & Personal Space



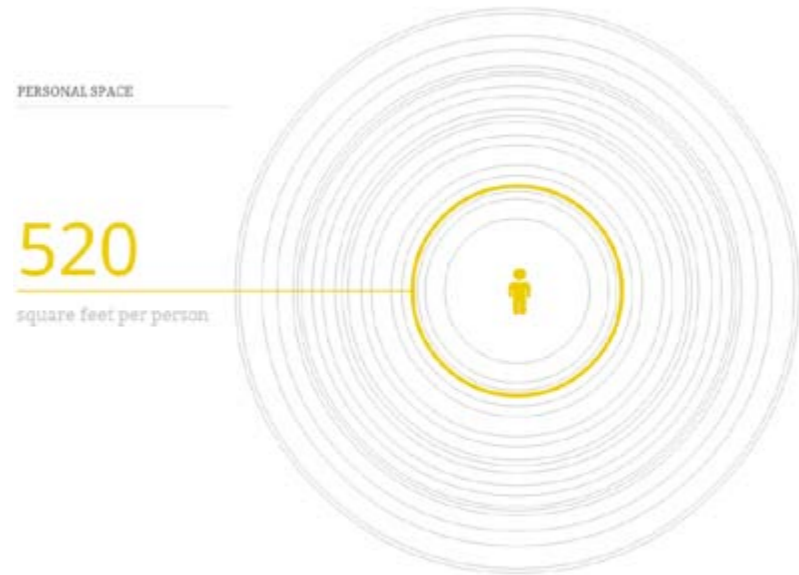
## Mumbai

- CITIES
- |             |                |
|-------------|----------------|
| Beijing     | Mexico City    |
| Berlin      | Moscow         |
| Cairo       | <b>Mumbai</b>  |
| Casablanca  | Nairobi        |
| Chennai     | New York       |
| Lagos       | Paris          |
| Lima        | Rio de Janeiro |
| London      | Shanghai       |
| Los Angeles | St. Petersburg |
| Manila      | Tokyo          |

## London



- CITIES
- |               |                |
|---------------|----------------|
| Beijing       | Mexico City    |
| Berlin        | Moscow         |
| Cairo         | Mumbai         |
| Casablanca    | Nairobi        |
| Chennai       | New York       |
| Lagos         | Paris          |
| Lima          | Rio de Janeiro |
| <b>London</b> | Shanghai       |
| Los Angeles   | St. Petersburg |
| Manila        | Tokyo          |



## Paris

- CITIES
- |             |                |
|-------------|----------------|
| Beijing     | Mexico City    |
| Berlin      | Moscow         |
| Cairo       | Mumbai         |
| Casablanca  | Nairobi        |
| Chennai     | New York       |
| Lagos       | <b>Paris</b>   |
| Lima        | Rio de Janeiro |
| London      | Shanghai       |
| Los Angeles | St. Petersburg |
| Manila      | Tokyo          |

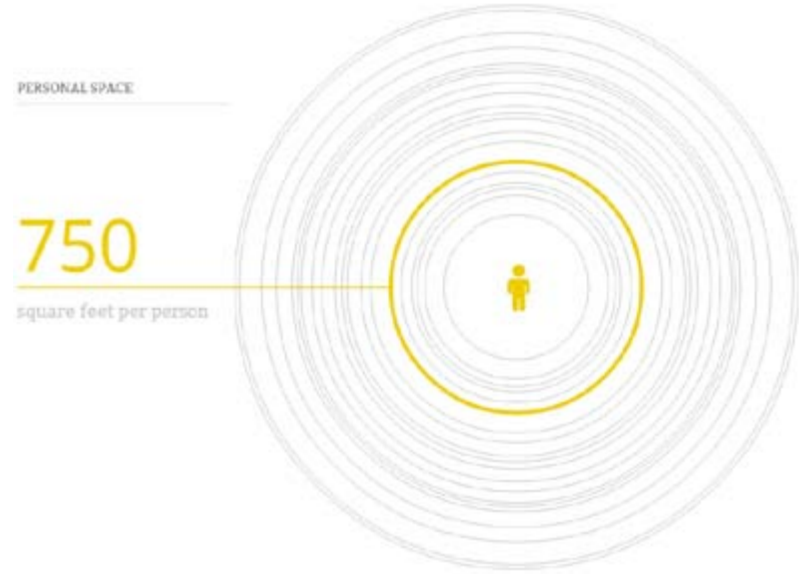
## St. Petersburg



- CITIES
- |             |                       |
|-------------|-----------------------|
| Beijing     | Mexico City           |
| Berlin      | Moscow                |
| Cairo       | Mumbai                |
| Casablanca  | Nairobi               |
| Chennai     | New York              |
| Lagos       | Paris                 |
| Lima        | Rio de Janeiro        |
| London      | Shanghai              |
| Los Angeles | <b>St. Petersburg</b> |
| Manila      | Tokyo                 |



# Cities & Personal Space

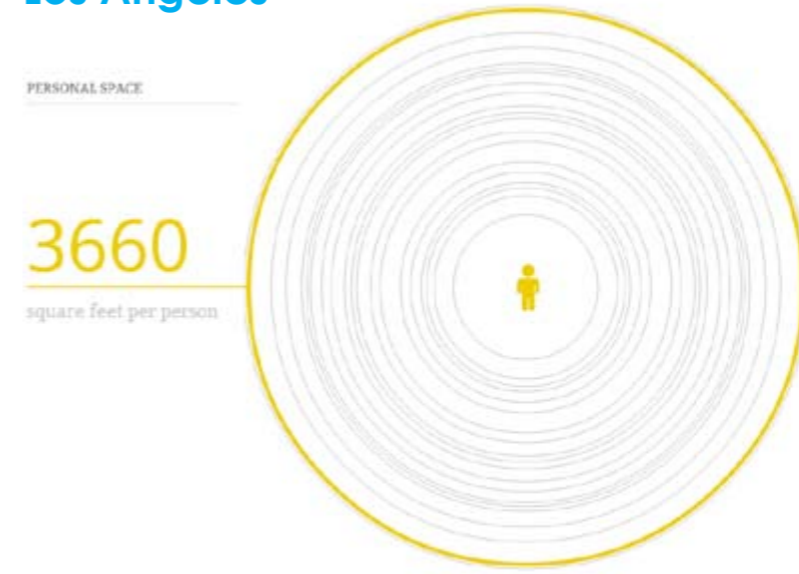


## Tokyo

CITIES

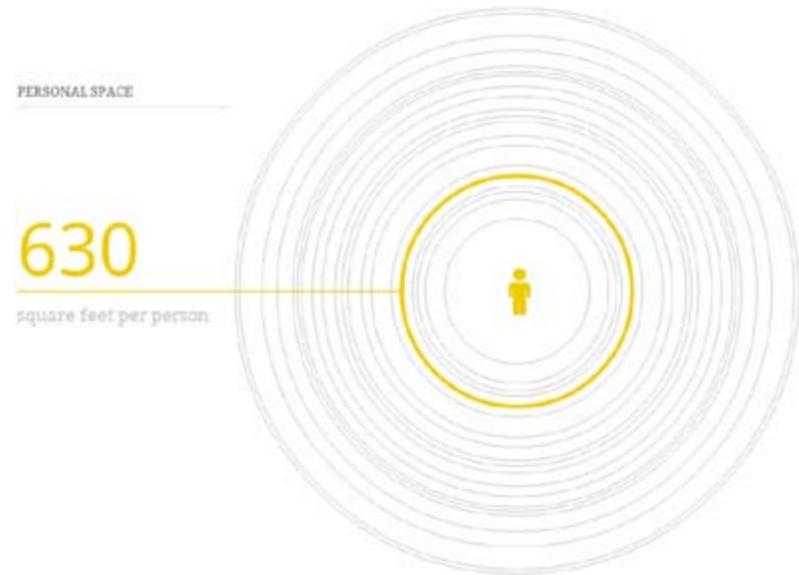
- |             |                |
|-------------|----------------|
| Beijing     | Mexico City    |
| Berlin      | Moscow         |
| Cairo       | Mumbai         |
| Casablanca  | Nairobi        |
| Chennai     | New York       |
| Lagos       | Paris          |
| Lima        | Rio de Janeiro |
| London      | Shanghai       |
| Los Angeles | St. Petersburg |
| Manila      | <b>Tokyo</b>   |

## Los Angeles



CITIES

- |                    |                |
|--------------------|----------------|
| Beijing            | Mexico City    |
| Berlin             | Moscow         |
| Cairo              | Mumbai         |
| Casablanca         | Nairobi        |
| Chennai            | New York       |
| Lagos              | Paris          |
| Lima               | Rio de Janeiro |
| London             | Shanghai       |
| <b>Los Angeles</b> | St. Petersburg |
| Manila             | Tokyo          |



## Cairo

CITIES

- |              |                |
|--------------|----------------|
| Beijing      | Mexico City    |
| Berlin       | Moscow         |
| <b>Cairo</b> | Mumbai         |
| Casablanca   | Nairobi        |
| Chennai      | New York       |
| Lagos        | Paris          |
| Lima         | Rio de Janeiro |
| London       | Shanghai       |
| Los Angeles  | St. Petersburg |
| Manila       | Tokyo          |

## Lima



CITIES

- |             |                |
|-------------|----------------|
| Beijing     | Mexico City    |
| Berlin      | Moscow         |
| Cairo       | Mumbai         |
| Casablanca  | Nairobi        |
| Chennai     | New York       |
| Lagos       | Paris          |
| <b>Lima</b> | Rio de Janeiro |
| London      | Shanghai       |
| Los Angeles | St. Petersburg |
| Manila      | Tokyo          |

## World Density Index

