

MUMBAI: CASE STUDY OF A MEGACITY

Mumbai is the largest city in India and the fourth largest city in the world (city population 13 million; metropolitan area population 20.5 million in 2012). It is the commercial capital of India and a global financial hub. It has been the main seaport in the Arabian Sea since the opening of the Suez Canal. The Jawaharlal Nehru Port of Mumbai handles 60% of India's containerised seaborne

An **urban area** is characterised by higher population density and large-scale human features in comparison to areas surrounding it. Urban areas may be cities, towns or conurbations, but the term is not commonly extended to rural settlements such as villages and hamlets.

Urbanisation means the physical growth of urban areas.

Suburbanisation is the growth of areas on the fringes of cities, most commonly wealthier residents seeking relief from the poverty, crime, congestion and pollution of the city centre.

A **megacity** is an urban area with a population in excess of 10 million people.

A **megalopolis** or **urban archipelago** is a urban area so large (greater than 15m) that it has more than one centre.

Million cities are urban areas with a population of over 1 million people.

A **world city** has significant global economic and political power.

A **global hub** is an urban area providing a focal point for activities that have a global influence.

A **metropolitan area** is a region consisting of a densely populated urban core and its surrounding territories, sharing industry, infrastructure, and housing.

The **function** of an urban area is its reason or purpose for being. This is determined by the dominant activity or land use in a given part of the city. Cities can have many different functions.

In general, the larger the city, the greater the number and variety of functions.

Figure 1: Key words

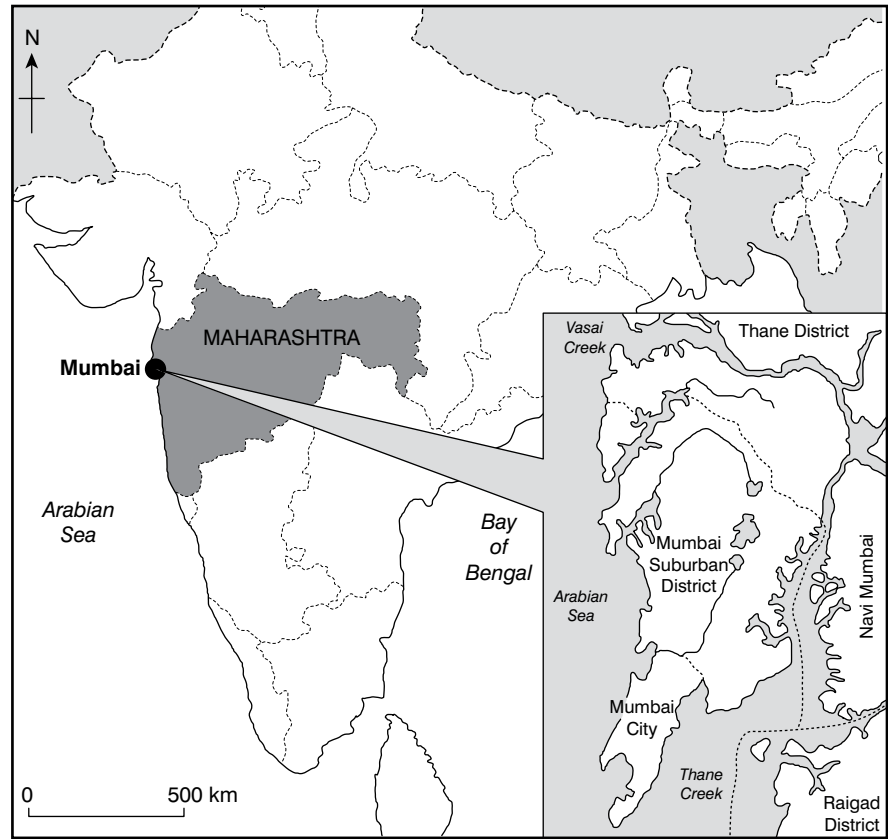


Figure 2: Map of India showing Maharashtra State and Mumbai (insert shows the main districts of Mumbai)

trade. Moreover, the city is home to the world's most prolific film industry. This **Geofile** will examine Mumbai's functions in order to understand why it has become such a successful global hub. The unit will also examine Mumbai's rapid growth, rural-urban migration, the resultant contrasting levels of development within the city and possible solutions for a sustainable future.

Location and geography

Mumbai is located on the western coast of India, where the Ulhas river meets the Arabian Sea. The city was once an archipelago of seven islands. These were consolidated in 1845 into one large landmass by the Hornby Vellard large-scale land reclamation project. As shown in Figure 2, Mumbai consists of two distinct regions: Mumbai City District and Mumbai Suburban District. The surrounding area is the metropolitan area of Mumbai.

The underlying geology of black Deccan basalt makes excellent foundations for the erection of

high-rise buildings. Today in Mumbai there are 43 skyscrapers above 150 m and 129 towers above 100 m. Furthermore, in 2012 the Brihanmumbai Municipal Corporation approved proposals for a further 78 skyscrapers. Official building regulations recognise that the city is located in a region vulnerable to seismic activity. Earthquakes up to a magnitude 6.5 on the Richter-scale may be expected. Large areas of slum and informal housing do not conform to building regulations and are vulnerable to seismic shocks.

Mumbai has a tropical climate. A dry season of seven months runs from October to April. The south-west monsoon brings heavy rainfall to the city between June and September, peaking in July. The climate exacerbates the challenge of living in slums in Mumbai.

History

The function of the earliest settlement on the archipelago was fishing. The islands were ruled by

successive indigenous dynasties, until they were offered to the expanding Portuguese empire in 1535. The islands came into the possession of the British East India Company in 1668. The company's headquarters were established here in 1687. As a result, by the middle of the 18th century, Bombay (as it was then known) had begun to grow into a major trading town, with a particular focus on cotton and textiles. The city was also the administrative centre of the Bombay Presidency. A political unit that along with the Calcutta Presidency and Madras Presidency acted as the foundation of British power in the sub-continent. During the American Civil War the city became the world's chief cotton trading market. This economic boom was extended with the opening of the Suez Canal in 1896. When India became independent in 1947, the city was incorporated into Bombay State. In 1960 a new state of Maharashtra was created, with Bombay as its capital. Throughout this period Bombay grew as an economic centre, driven by the strength of Indian multinational companies, such as Tata and Reliance. The city was renamed Mumbai in 1995 to strengthen local Marathi identity in the Maharashtra region.

Size and growth projections

Mumbai is a consolidating **megacity**. It is growing rapidly due to both in-migration and natural population growth. **Urbanisation** occurs as population increases by in-migration. At the same time, **suburbanisation** occurs as wealthier people move from centre to edge. The Brihanmumbai Municipal Corporation which administers the city is attempting to plan its growth. Their efforts are focused on waste management, alleviating congestion and improving water supply.

Greater Mumbai had a population of 12,478,477 in 2011 (Government of India Census). This was 4.7% larger than in 2001, when the Census recorded a population of 11,914,398. Greater Mumbai occupies 438 km² yet the metropolitan area is almost ten times bigger at 4,355 km². The area includes outlying townships that are million cities on their own account. It is estimated that the total population of Mumbai, including the **metropolitan area** is 20.5m. According to the International



Figure 3: Mumbai skyline from Nariman point

Source: Wikipedia/fayaram Kowta

Institute of Population Studies, Mumbai's population is growing by 480 people per day. As a result, the UN report *State of The World's Cities 2012-13* estimates that the population of Mumbai, including the metropolitan area, will reach 25.8m by 2025.

Urban functions

Mumbai has several main **functions**. These functions have regional and global significance. In 2012, the Economist Intelligence Unit ranked the competitiveness of global cities according to their ability to attract capital, businesses, talent and visitors. Mumbai was ranked 70th in the world. Functions help explain why the city is so well connected. Specialisation in industries such as finance and film help explain the presence of important clusters. Clusters attract investment in skills, machines and technology which lead to higher productivity. This explains why workers in such clusters maintain higher living standards. Mumbai's main functions are set out below.

Finance

Mumbai is the commercial capital of India. This function has attracted a cluster of key financial institutions to the city: the Reserve Bank of India, the Bombay Stock Exchange, the National Stock Exchange of India and the Securities and Exchange Board of India. This financial cluster in turn attracts the corporate headquarters of Indian

companies and multinational corporations as they seek to raise capital for their enterprises. Examples include the Tata Group (revenues of \$71bn) Essar Group (revenues of \$20bn), and Reliance Industries (revenues of \$59bn). This function has witnessed an economic boom since the liberalisation of 1991, the finance boom in the mid-nineties and the IT, export, services and outsourcing boom in 2000s. Figure 3 shows the rapid development of the Mumbai skyline for the financial cluster and concentration of TNC headquarters.

Government

Mumbai is administered by the Brihanmumbai Municipal Corporation. The city is also the seat of the Bombay High Court, which exercises jurisdiction over the states of Maharashtra and Goa, and the Union Territories of Daman and Diu and Dadra and Nagar Haveli. The city is also the centre of government for Maharashtra State. As a result, state and central government employees make up a large percentage of the city's workforce.

Manufacturing

Industry in Mumbai was focused on textiles and precious metals, such as silver and goldsmiths. The textiles industry was once so big that Mumbai (then known as Bombay) was often referred to as the 'Manchester of the East'. However, with the development of newer

industries in and around Mumbai, these mills ceased to be profitable, and fell into a state of disrepair. New industries have been established in the city over the past 20 years, often redeveloping former mills and other brownfield sites. For example, the former Mafatlal Mill is now being redeveloped as Marathon Futurex, an IT and financial business centre. The availability of venture capital in the same location as a research cluster has encouraged start-up companies in aerospace, optical engineering, medical research, information technology, renewable energy and power. But there are many smaller, less high tech businesses in poorer districts of the city. In Dharavi, a huge densely populated slum of over half a million people in central Mumbai, there is an increasingly large recycling industry, processing recyclable waste from other parts of the city. The district has an estimated 15,000 single-room factories.

Transport

Mumbai accounts for 40% of India's foreign trade. The Chhatrapati Shivaji International Airport is the main aviation hub in the city and the second busiest airport in India in terms of passenger traffic. It handled 30.74 million passengers and 656,369 tonnes of cargo during 2011-12. The capacity of the airport is being increased to handle up to 40 million passengers annually. A new international airport has been sanctioned by the Indian Government and will help relieve

the increasing burden on the existing airport. The Jawaharlal Nehru Port, which currently handles 55–60% of India's containerised cargo, was commissioned in 1989. It is a hub port for the city and the Arabian Sea. Mumbai Port remains one of the world's best natural harbours. It still deals with commercial cargo but has diversified into a destination for cruise ships and pleasure craft. Mumbai is also the headquarters of two of Indian Railways' zones: the Central Railway and the Western Railway. Therefore, the city is very well connected to most parts of India by long-distance trains.

Science and research

The city can be considered a technopole. India's premier scientific and nuclear institutes are based here. They include the Bhabha Atomic Research Centre, Indian Rare Earths Limited, the Tata Institute of Fundamental Research and the Department of Atomic Energy. There is a particular expertise in nuclear technologies.

Media

Most of India's major television and satellite networks, as well as its major publishing houses, are headquartered in Mumbai. Bollywood is the informal term used for the Hindi-language film industry based in Mumbai. Indian cinema includes other production centres producing films in multiple languages. Bollywood is the largest

The main assumption of the model is that the migration decision is based on expected income differentials between rural and urban areas rather than actual wage differentials. Therefore, stories of successful migration outcomes that filter back to the countryside can influence many more migration decisions, despite the fact that many migrants are less successful in the city.

Figure 5: The Harris–Todaro Model of rural-urban migration

film producer in India and one of the largest centres of film production in the world. The main studios are based in Goregaon, including Film City. The city is also home to the Marathi film industry.

Rural-urban migration

Rapid growth of megacities in Asia, like Mumbai, is driven by rural to urban migration. Fast population growth in rural areas results in depressed wages (under-employment) and scarcity of goods. Higher productivity in cities leads to higher wages and an improving quality of life in urban areas. The bigger the perceived contrast in life chances between rural and urban areas, the greater the speed of urban population growth (Figure 5). This is why cities in poor countries tend to grow fastest. Natural rates of population increase can also be high in urban areas that receive high numbers of migrants of child-bearing age. As a result, Mumbai's growth was fastest when the city was less well developed than it is today. Between 1971 and 1981 the population grew by 38.1%, whereas between 2001 and 2011 the population grew by 4.7%.

Further pull factors include clusters of similar businesses which act as a magnet for employees, such as leather goods in Dharavi, Mumbai. Public services are easier to fund in densely populated areas. Cities therefore have better health and education outcomes which tend to increase productivity and incomes. These advantages attract more migrants. Cities fund art and culture, have an openness to science and education and display the toleration required to benefit from ethnic diversity. Creative people are attracted to cities and are associated with economic dynamism.



Figure 4: Pottery unit in Dharavi, Mumbai

Source: Wikipedia/MM



Figure 6: Jawaharlal Nehru Trust Port

Source: *Jaxar* at *en.wikipedia*

Push factors from the countryside are also significant in explaining rural-urban migration. Loss or degradation of farmland and pastureland due to development, pollution, land grabs, or conflict are important push factors. Also, the growth of mass transportation and improved communication within developing countries decrease the intervening obstacles to movement.

Contrasting levels of development (two-speed world)

It is inevitable that fast growing megacities display highly contrasting levels of development. On the one hand, clusters such as financial services offer high incomes and rewards to owners and key employees. On the other hand, fast rates of urbanisation driven by rural migration causes widespread poverty and unemployment, poor public health and poor civic and educational standards for a large section of the population. With available land at a premium, Mumbai residents often reside in cramped, relatively expensive housing, usually far from workplaces, and therefore requiring long commutes on crowded mass transit, or clogged roadways. The most successful residents however live in wealthy gated communities.

Mumbai's geography exaggerates these contrasting levels of development. The city is built on an archipelago that has been enlarged and consolidated by land reclamation. It extends out into the Arabian Sea. This means that transport links are limited. As a result, people who work in the city must live near it. The result is tiny living spaces of 4.5m² per person, compared with 34m² pp in Shanghai. Prices are high: flats cost

\$1m-3m and the average price of 1,000-square-foot of accommodation in the city is \$250,000, or 90 times GDP per capita. With flats out of reach, the proportion of people living in slums has risen to over 60%, compared with 20% in Rio de Janeiro and Delhi. Of the rest, about half live in dilapidated rent-controlled houses, sometimes propped up by wooden staves, or flats for public-sector employees. The city has very tough regulations on new building. These are designed to deter migration, yet have not done so; but they have prevented the building of affordable housing. As a result, most of the new development on brownfield land is at the top-end of the market.

Solutions for the future

Mumbai needs better transport and more high-rise buildings and skyscrapers. This will increase the supply of flats at lower prices and allow residents to live further from their place of work. There are some projects being delivered. The first overhead metro line, in the north of the city, and a short stretch of monorail running north to south, are due to open in 2014. The current city plan has approved a further 78. An unregulated building spree would be counterproductive unless the state gets better at planning and providing more infrastructure such as roads, sewage and water.

Slums can be developed through improved sanitation and site and service development. Both are being pursued in Mumbai. The successful community toilet programme in the city is being extended. This involves the BMC building toilets which are run by NGOs and local communities. Users pay a small fee and this makes the service sustainable. A number of slums have

been demolished by the BMC and attempts have been made to rebuild the housing at higher density.

However, none of these solutions address the underlying issue of poor transportation causing high population densities and excessive regulation and rent control discouraging the construction of affordable housing. Corruption and graft are also seen as barriers to better development. There are concerns that transport projects are delayed and too many outdated rules survive because an elite finds the current situation lucrative, even though this means the city's development is strangled.

Poor transportation also leads to heavy congestion. Mumbai generates a 'poison cocktail' of pollutants. It is estimated that cities are responsible for 75% of global CO₂ emissions. The scale of the challenge is shown by a study by consultants Booz Allen Hamilton that estimated \$40 trillion will need to be invested by 2030 in transport, energy and water networks to make megacities sustainable.

Further reading

The Official Website of the Municipal Corporation of Mumbai (<http://www.mcgm.gov.in/>).

National Geographic Magazine, 'Dharavi: Mumbai's Shadow City' (<http://ngm.nationalgeographic.com/2007/05/dharavi-mumbai-slum/jacobson-text>).

The Economist, 'The Minimum City' (<http://www.economist.com/node/21556584>).

FOCUS QUESTIONS

1. Rank order Mumbai's functions in terms of their importance in making the city a global hub. Justify your ranking.
2. Using examples, explain the causes of rural to urban migration that feed megacity growth.
3. Explain why megacities like Mumbai contain populations demonstrating widely different levels of development.
4. Essay: 'An extreme two-speed world within a city like Mumbai is unsustainable.' Discuss.